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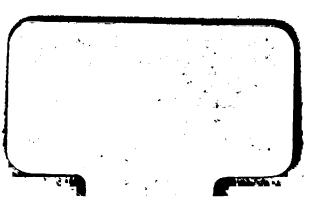

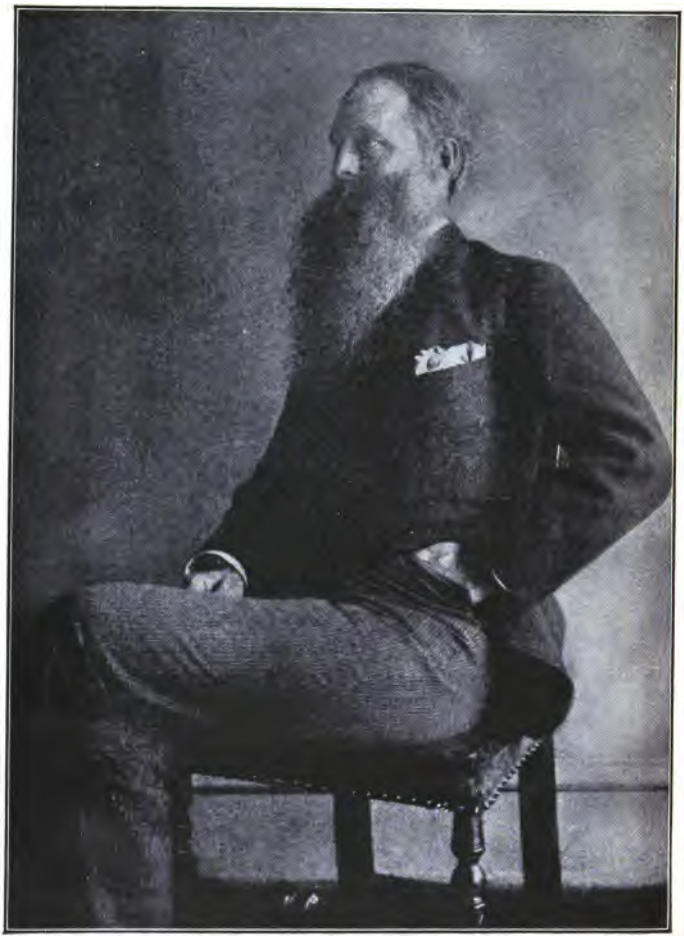

RAPHAEL PUMPELLY AT FORTY-SEVEN YEARS
From a photograph by Mrs. Henry Adams, 1884

TRAVELS AND ADVENTURES OF RAPHAEL PUMPELLY

MINING ENGINEER, GEOLOGIST, ARCHAEOLOGIST and EXPLORER

BY

RAPHAEL PUMPELLY

From the author's MY REMINISCENCES, edited by O. S. Rice, State Supervisor of School Libraries, State Department of Public Instruction, Wisconsin

NEW YORK
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1920

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EDITOR'S PREFACE

While reading *My Reminiscences,* by Raphael Pumpelly, which appeared in two volumes in 1918, I found it difficult to lay the book down to attend to such comparatively trivial matters as meals and sleep. The author's experiences as a mining engineer in Arizona when that region was terrorized by outlaw white men, murderous Apaches, and treacherous Mexican peons make a story which vies in interest with the most stirring tales of adventure ever written. His travels and adventures in the mountains of Corsica, among the hiding places of outlaws of the vendetta, give vivid pictures of a region and its primitive people but little known to most readers. The moufflon story, a sequel to the Corsican experiences, is a most captivating and unique story of a "tame" wild animal. Travel and adventure in Japan, China, and Siberia and early explorations of the Lake Superior mining region are among other experiences which the author draws upon for the story of his long and eventful career.

On completing the reading of the narrative, I was fully persuaded that an abridged edition of the *Reminiscences* especially intended for young people ought to be published. As a result of a suggestion made to the author that he prepare such an edition, I was asked if I would not be willing to do so. Although I had but little spare time to draw upon, I agreed to the proposition, for the reason that I desired very much to see such an appealing

life story put into a form which would especially attract young readers.

The story as given in this edition is in Mr. Pumpelly's own words. The direct style and the short, cumulative sentences of his *Reminiscences* made changes both unnecessary and inadvisable. The editing has consisted mainly in selecting those parts of the original work which are of most interest to young readers, yet which make a connected story. Some of the longer chapters have been subdivided into two or more and a number of chapter headings have been changed. In a few instances, short connecting parts have been written. Illustrations have been added which give special emphasis to the *action* of the narrative.

It is apparent from the above that the story has not been "written down" for juvenile readers. They get it in its original, virile form. For this reason, the book will appeal to "young people of all ages." Older people who become interested in this edition will find the *Reminiscences* of compelling interest from cover to cover of its two volumes.

O. S. Rice.

Madison,
Wisconsin,
October 1, 1919.

CONTENTS

CHAPTER		PAGE
I	My Childhood and My First Adventures	9
II	School Days	18
III	I go to Europe	22
IV	Germany and France	25
V	Italy	32
VI	In the Mountains of Corsica	39
VII	In the Haunts of Outlaws of the Vendetta	51
VIII	By Donkey to Ajaccio	59
IX	Chance Determines My Career	67
X	Student Days and Pranks at Freiberg	72
XI	Another Summer in the Mountains of Corsica	76
XII	My "Tame" Mouflon	80
XIII	My Mouflon "Performs" in Vienna	89
XIV	In Search of Adventure	101
XV	Sequel to the Mouflon Story and Return to America	106
XVI	I go to Arizona	112
XVII	Life at the Santa Rita Mines	120
XVIII	Outlaws and Apaches	126
XIX	The Apache Terror	134
XX	A Ride for Life	145
XXI	Smelting Ore Under Difficulties. The Mines Abandoned	151
XXII	Across the Desert to Papagoria and the Sequel	155
XXIII	Closing Scenes and Escape	164

CONTENTS

CHAPTER		PAGE
XXIV	PURSUED BY DESPERADOES	172
XXV	THROUGH DESERT PERILS	178
XXVI	A PLOT DISCOVERED IN TIME. JOURNEY TO CALIFORNIA	189
XXVII	I ENTER THE JAPANESE SERVICE	195
XXVIII	FIRST JOURNEY IN YESSO. PRIMITIVE MINING METHODS	201
XXIX	SECOND JOURNEY IN YESSO. AINOS. I TEACH THE USE OF POWDER IN MINING	209
XXX	SHANGHAI	217
XXXI	JOURNEY UP THE YANTZ' KIANG BEGUN	222
XXXII	AN AMERICAN FREE LANCE CHECKS THE TAIPING REBELS	227
XXXIII	BOAT JOURNEY CONTINUED	235
XXXIV	CHOLERA DRIVES ME NORTHWARD	245
XXXV	ON AN IMPERIAL MISSION	248
XXXVI	A DISAPPOINTMENT AND A JOURNEY DELAYED	261
XXXVII	ALONG THE GREAT WALL	265
XXXVIII	FROM PEKING TO NAGASAKI	274
XXXIX	ON THE TABLE-LAND OF CENTRAL ASIA	278
XL	JOURNEY ON THE TABLE-LAND CONTINUED	287
XLI	SIBERIA	297
XLII	FROM IRKUTSK TO OMSK	305
XLIII	ACROSS THE URAL MOUNTAINS	315
XLIV	TO PARIS AND HOMEWARD BOUND	320
XLV	MANY OPPORTUNITIES IN MY HOMELAND	324
XLVI	IN THE WILDS OF NORTHERN MICHIGAN	328
XLVII	A DUKE INTRODUCED TO "DEMOCRACY." VENTURES	338
XLVIII	I WRITE AN ACCOUNT OF MY EXPERIENCES. MORE VENTURES	344
XLIX	WRITING, RESEARCH, AND FARMING. CENSUS OF MINERAL RESOURCES	352
L	AFTER MANY YEARS	356

ILLUSTRATIONS

RAPHAEL PUMPELLY AT FORTY-SEVEN YEARS. From a photograph by Mrs. Henry Adams, 1884 . *Frontispiece*

PAGE

THE REAL DANGER LAY IN THE CHANCE OF LOSING CONTROL AND BEING WHIRLED OUT INTO THE RAPID CURRENTS 13

THE MOUFLON STOOD BETWEEN THE LEGS OF AN INVERTED TABLE. THE KITCHEN WAS A WRECK . . 85

THE INDIANS YELLED AND FLOURISHED LANCES AND BOWS 129

THE APACHES IN PURSUIT OF RHODES 167

FUJIYAMA AND INOSIMA. From a Japanese sketch . . 196

SHE BEGAN TO HACK AWAY AT THE BAMBOO ROPE . . . AT THE TIME POURING FORTH A TORRENT OF ABUSE . 239

TEMPLE OF HEAVEN AT PEKIN 255

ALTAR OF HEAVEN. Connected with the Temple of Heaven by a broad causeway 257

THE GREAT WALL OF CHINA 266

A ROADWAY HOLLOWED IN LOESS BY WIND AND TRAFFIC. From Richthofen's *China* 268

PRINCE. CAMELEER. Mongolian types 281

THE CAMEL DRAWING ST. JOHN'S CART HAD TURNED AND FLED 291

CHAPTER I

MY CHILDHOOD AND MY FIRST ADVENTURES

FORTUNATELY the stork chose well my destination; for instead of imprisoning me in the confinement of a city he sought for me the free air of the country. This was on the 8th of September, 1837, in Owego, N. Y. The valley of the Susquehanna has, through hundreds of milleniums, been cut a thousand feet deep into the great table-land that stretches from the Appalachian Mountains to the Mississippi River. In this valley, now narrow, now broad, the river winds its way in graceful curves, now widened with slow and eddying currents, now narrowed into roaring rapids.

In my youth this valley was full of Indian legendary interest and of tales of the transition period. The tragic episode of the "Wyoming Valley," famous for its beauty, was still fresh in the memory of some of our family connections who occupied that valley soon after the massacre.

My paternal grandfather, after having served, from boyhood up, through all the French and Indian colonial wars, from the siege of Louisburg to the end on the Heights of Abraham, and then through the war of the Revolution, moved with his family to what is now Danby near Ithaca, N. Y., after his oldest son, James, had spied out the land. There were four brothers among the children. They were surveyors, and my exploring tendencies are thus easily accounted for. My uncles took

part in defining the boundary between New York and Pennsylvania as well as surveying the several large patents derived from the Indians and from the Connecticut Grant.

In time my father and his brother owned large tracts of land, then forest-covered and abounding in great white pine. They built lumbering camps and mills, made roads for hauling logs to the mills and timber to the river, where it was built into rafts and "arks" to be floated to the coast.

At the time of my birth the village of Owego was already about forty-five years old. It lay along the shore of the river. The inhabitants were, nearly all of them, original settlers who had come from Connecticut, some of them from the prominent colonial families of that state. They brought with them the religious and educational traditions of New England. They had had their education in the schools and in the farm life of their youth. Few of them had been through college, but nearly all had the essentials of the education of the time, and some knowledge of the English classics, and they read and digested the few solid books they possessed.

This community early established the Owego Academy, an excellent school preparatory for college and taught by able teachers, though I must add from experience that their rods and rulers seemed unnecessarily hard and stinging. Out of this Academy have come a number of men who have shown ability in various directions as lawyers or justices of the State Supreme Court or as college professors, and one member of the President's Cabinet. Of the two Rockefeller brothers, part of whose youth was passed near Owego, William was a pupil in the Academy after my time.

My father was blonde, standing erect six feet two. He

was a man of noble features and fine presence, of equable and kindly temperament, and with broad sympathies. In selling lands for farms he never foreclosed a mortgage nor ejected a tenant, but helped his debtors when pressed by others. He had a comfortable fortune, for that time, even after diminishing his means in making up the deficit caused by an unauthorized loan made to a railroad promoter by the cashier of the bank of which he was president. He gave freely to church and missions and public purposes. In religion he was a firm believer in the inspiration of the Bible, and although a Presbyterian, he had no bigotry of sect but was a thoroughly consistent Christian.

My mother was of medium stature, erect and energetic, and affectionate, and artistic in temperament. Carrying in herself, from mother and father, through intermarriages, double and treble strains of inheritance from most of the ruling families of colonial Connecticut, she was quietly proud of her descent. In the matter of manners and bearing she required much from us, but not to the extent that had been demanded by her parents in whose presence their children did not sit until told to do so. She was sent to Mr. Jourdan's school in Philadelphia. Later she had some instruction in painting from a neighbor — an émigré from the French revolution — and some hints from Catlin who visited her father at Tioga Point. The portrait painter Le Clear told me that my mother gave him his first instruction in painting.

During several years of my boyhood my mother was almost out of my life, owing to her ill health and a long siege of nervous prostration. I then learned to step lightly, speak low, and close doors noiselessly, traits that were so deeply impressed on me that they unconsciously control me still.

When I was about four years old there came an experience that put me at a disadvantage with other boys. I was standing on a timber raft that was moored to the shore in an eddy of deep water. My brother, thinking to teach me to swim, suddenly threw me into the river, where instead of swimming I sank. Fortunately the current carried me through to the other side of the big raft before I came up. I sank twice before they could rescue me.

This was my second escape from drowning, and the impression caused by the shock was an indelible fear of water beyond my depth. As I grew older I learned to swim in shallow water, but the instant the question of depth arose, I would sink like a stone. Only after I was forty did I risk myself beyond my depth, and that was under a challenge.

As an offset, not liking to be thought cowardly, I made a point of challenging boys to follow me in dangerous "stunts." When they laughed at me because I couldn't skate, I would run over thin or rotten ice where they dared not follow; or if it was in swimming I would shoot a dam on a plank; or dare them follow me up a dangerous cliff supposed to be inhabited by rattlesnakes. My most daring challenge was to navigate, as I did, the river in flood time on a cake of ice; it found no takers, and twice nearly finished me. When the ice on the river was broken up by the great spring flood, large cakes ten or fifteen feet square would tarry along the shore of an eddy. The stunt was to shove the cake loose and float with it downstream, steering it near the shore with a stout pole. Because it would break into smaller and smaller pieces, one had to try to keep always on the largest piece, and be ready to jump to the bank when the danger point came. The real danger lay in the chance of

THE REAL DANGER LAY IN THE CHANCE OF LOSING CONTROL, AND BEING WHIRLED OUT INTO THE RAPID CURRENTS.

losing control, and being whirled out into the rapid current. This happened to me once. I saw a half-mile ahead of me, and beyond the bridge, a ferry boat worked by a rope and pulley running on a cable stretched across the river. (The upper works of the bridge had been carried away.) I had been seen, and I hoped the pilot would try to intercept me, and that my cake of ice would hold together. But I saw also that great cakes ahead of mine were breaking up against the piers of the bridge which lay between me and the boat. The water was very deep, and I could use my pole only in pushing against such large pieces as I could reach. As it was, my cake just rubbed against the edge of the ice that was crushing against the pier, and this touch sent my cake through, whirling round and round, and heading for the boat. The pilot managed so that another man caught me from the ice as it rushed by.

In such ways I "saved my face," not without much anxiety however on my own part. As I look upon life as a continuous course of learning, I look back on this bravado as a most valuable part of my education; it taught quickness of perception, the instant coöperation in emergencies of brain, eyes, hands, and feet, and that balance between caution and action that forms a basis of judgment.

I am sorry to have to record that I was quite wrongly supposed to be a "good boy." The truth seems to have "leaked out" early, however. I once met, in the West, an old lady who had lived near us in my youth. She told me that when I was four years old she heard my father say to me: "I'm afraid my little boy doesn't love Sunday."

"Oh, yes, I do, papa," I answered.

"I'm so glad you do, now tell me why you love it."

"Because it goes away Monday morning."

At least in one way, Sunday had benefited me: for I was thrown back on the Bible for my only reading. We had one in many volumes with copious commentaries, all of which I read through three times, though there was of course much that I did not understand.

We had also some books on Mythology, in which I browsed — when my dear mother was absent — for they were forbidden fruit. But my greatest delight was in Rollin's Ancient History.

When I was about eight years old, my mother read aloud to us Hugh Miller's "Old Red Sandstone." It interested me, and I began to look for fossils among the rocks of the cliffs of our valley, where I had seen things that aroused my curiosity. They were there in abundance, and they were soon too numerous in our house for general comfort. This too had an influence on my later life.

There was a small group of boys, seven or eight years old, who were inclined to follow my lead. We had absorbed Indian stories, and at first these gave the staging for our pastimes, but when we came into possession of "The Pirates' Own Book" the Indian performances seemed tame, and we were launched on a downward career. We found caves where we met and consumed the booty, which at first consisted of the product of raids on the home pantries; we even learned to make the necessary keys. Before long our feasts included fruit and green corn from the fields of unrelated owners. Then we appropriated cider and wine. In time we borrowed boats, and later actually took permanent possession of one which we succeeded in hiding. This not only widened our

range of operations, but also gave them the final stamp of piracy. We had the conventional quarrels in division of spoils, and I still bear the scar of a stab in my leg.

This outlawry had continued for a long time apparently unsuspected from the outside. Our frequent absences from school, as well as growing reckless conduct during school hours, resulted in more frequent whippings, and, doubtless, judging from the rush of blood to his face, much disturbance of the nervous and digestive condition of the headmaster; I have now a profound sympathy for him: for he was otherwise an excellent teacher.

But the end came suddenly and effectually. One day on coming to school, I met the headmaster on the stairs. He stopped me and pulled from my pocket a small bottle of port wine. Being caught, and angered at the loss, and knowing that an extra hard ordeal was sure to come, I determined to get full value, and made a bonfire of papers under my desk. Memory feels still the sting of the penalty.

The climax followed quickly. I was found out in something really bad, something that under the law would have meant the juvenile court, had one existed then.

Most fortunately my dear mother was equal to the occasion. She took me to her room, and there talked to me quietly, dispassionately, logically. After getting a full confession of the whole downward career, from beginning to end, she developed clearly to me the whole tendency of my course, in its relation to crime and disgrace, and to the dishonor of the untainted family name. Then, for the first time, I realized: before the only thing of importance had been not to be found out. Now I received a clear and startling conception both of the ethical and personal bearing of my conduct. When my mother saw how thoroughly I understood, how deeply the

impression was stamped, and my repentance, having got my acknowledgment that I deserved severe punishment, she gave me a sound thrashing, which I bore throughout with the feeling that it was doing me good.

My mother's talk with me sank deep into my soul; it made me morbidly sensitive for a long time, but the impression remained through life.

CHAPTER II

SCHOOL DAYS

It was decided to send me away to a boarding school. My sister had married and as her husband's brother — a boy of about my age — was at Mr. Harris's school at White Plains, N. Y., that was to be my destination.

The Erie railroad had already been built as far as Owego and beyond, and over this, an all-day journey through the outer world brought my mother and me to New York, and to new wonders for the country boy. We remained in the city a few days.

When we reached White Plains, my mother left a very homesick boy and a large hamper of cakes and marmalades.

It was a small school — about thirty pupils — and somewhat exclusive, the boys coming largely from old city families. There were extensive grounds, including a large grove. Being on high ground, it looked over a large extent of surrounding country.

The years at this school were happy ones, and they were in all respects the healthiest in my school life. We had our fights, in one of which my opponent won by hurling a broken tin cup which cut through an eyelid leaving it attached at both ends, and having to be stitched into place.

I liked my studies, but, although the annual report to my father gave me high marks, I was behind the best of the pupils.

One of the assistant teachers sometimes went with us on excursions or to bathe in the Bronx. He knew something of geology, and, although there were no fossiliferous rocks, I learned to recognize a number of minerals and rocks which were composed of them, which increased an interest already begun at home.

I find from some letters of the time that I was bent on going to sea, and wanted above all to get into the expedition Commodore Perry was to make to Japan. My letters showed such determination that my brother — eleven years my elder — was sent to dissuade me. When that failed to move me I was told that if I would wait till I should be ready for college, my brother and I should go to Australia; and to this I agreed. I remembered the widespread excitement caused by the discovery of gold in California, and with what intense interest I watched all the preparations making by a group of young men who were among the first to start after the news reached the East.

At last the time had come for me to prepare for college. All my mother's forbears of the eighteenth century, and my brother as well as my cousins, on both sides, had graduated, most of them, at Yale. So I was sent to Mr. William Russell's "Collegiate and Commercial Institute" at New Haven. Soon after, he was made adjutant general of the state, and the school became known as General Russell's, and later very widely known from the officers it contributed to the Civil War.

Besides the ordinary curriculum of studies preparing for college, we had military drill. I think this occurred every day; and it was very thorough. It certainly was an efficient factor in my education, and one that should exist, during several years, in the school life of every boy.

I look back with pleasant memory on those years. There were some adventures sufficiently thrilling on land and water. Once we were out all night without compass or chart, drifting in a dense fog on the Sound. Another time, as Dunham and I stood looking up at West Rock which then ended in a real cliff of basaltic columns, Dunham said: "That's a place that I bet even you can't climb." It did seem impossible, but I didn't like the way Dunham put it, and I accepted the challenge.

The next Saturday we were there soon after the noon dinner. I looked long to find the best way up, but the longer I looked, the more there seemed not to be any way. There did seem to be a bare possibility of reaching a niche not far below the top, and I decided to try for the niche, and then trust to luck. The approach to the cliff was up a talus of broken columns. The cliff itself was of columnar basalt; the columns, writing from memory, were four to six inches in diameter, cross-jointed with cracks, and much broken. The only foothold was on the tops of broken columns, and the piece stepped on was often loose and ready to fall, and many did fall as I left them. The climbing was very dangerous, and only practicable by never advancing without having a sure hold with at least one foot and one hand. Slow and careful work brought me, however, to the niche, though at almost every step I really regretted having accepted the challenge.

After a rest, an anxious survey of the possibilities showed the top to be overhanging, and no way of reaching it by climbing. I looked far down over the way I had climbed, and I remembered that it was possible to go up where one could not get down. The prospect was decidedly unpleasant. The afternoon was well advanced, and a crowd of quarry men were wildly shouting and

gesticulating far below, which did not encourage me.

There was nothing to do but to try to descend. Once started I should surely reach the bottom either sound or in connected pieces. So I threw my shoes down; I might want them again. The descent was much slower and more difficult and anxious than the climb. It required very careful feeling for foothold, first on one rock, then on another as the first one gave way and tumbled down the face of the cliff. The bottom was reached however before dark. I think Dunham was more wrought upon by anxiety than I was by that and fatigue. He wept, and the crowd scolded and praised me.

It was a foolhardy adventure, but it was a valuable incident in education which, several years later, carried me through some difficult mountain episodes in Corsica; and I could not have got down safely without my earlier experiences in climbing as a small boy.

During one of our early morning readings, in the spring of 1854, Dunham said:

"Pompey"— that was the name all my Pumpelly cousins and my brother bore through school and college, and which descended to me —"Pompey, I've made up my mind not to go to Yale, but to finish my studies in Germany."

Dunham and I were the closest of friends, I loved him as a brother, and my first thought was one of grief at the parting.

This casual announcement decided my future; I too would not try for Yale — if I too might go to Germany to study.

CHAPTER III

I GO TO EUROPE

On my way home, on leaving New Haven, I met my mother at my sister's house, which her husband had bought, just above 32nd Street on Fifth Avenue.

Here, choosing the proper moment, I put out a feeler in the matter of studying in Germany instead of going to Yale. My mother's silence left me in doubt, but the next morning she kissed me and said: "We will go, let me arrange it." I knew my mother, and that it was settled; my father would consent; and when we reached home, he accepted the plan.

On the 4th of June, we boarded the half-clipper ship *Donau,* Captain Heydtmann, bound for Hamburg. As we bade good-by to my dear father, who had come to see us off, and watched him from the receding ship, I felt for the first time, what it must mean to his deeply affectionate nature to have us leave him alone, long separated from us by time and distance. I do not know that he had at any time raised any objection to the plan.

After two days of seasickness, the voyage was delightful. The captain was very agreeable, and so were the few passengers of whom one, Dr. J. F. Noyes, became a life-long friend. If there was any defect in the cooking, the sea appetite made it good. The air was so refreshing that I took my blankets and a waterproof up every night and slept on the hard deck. We entered the Elbe June twentieth, fifteen and a half days from New York—

though it may have been counted from Sandy Hook. The same vessel had made the previous trip in fifteen days.

Our introduction to Europe was not in arriving among the distractions of a harbor, but in sailing up the river Elbe, greeted by the fragrance of newly mowed grass, wafted in the air from the broad, smiling meadows that spread back from each shore.

As soon as we reached still water, a dance was started on the deck, and then there appeared a passenger not seen before — a German lady at least seventy years old, who had not left her berth during the voyage, but now danced as lively as the others.

We arrived at Hamburg without having formed any definite plans for the future, excepting that the first step should be to learn the German language. For this we went at once to Hanover, where it was supposed to be spoken with the best accent.

Soon after arriving in Hanover I engaged a riding-master. I had ridden a great deal on my father's horses, and had a good seat, but the instruction in the Continental Military School of Horsemanship then received has always since been of great use to me.

I had also, soon after arriving, engaged a sword master, and throughout my stay in Hanover, I practised with the foils and saber, and for some time with the *palash*. The latter is a long, heavy blade used with both hands, chiefly in heavy downward strokes. The protection for the head was a strong, rather heavy, iron basket, thickly padded inside, which deadened the effect of very heavy blows. There was a young Englishman with whom I had practised a great deal with the *palash*, giving and taking at times severe strokes on the head. One day, after failing to parry a moderate stroke, he staggered

back evidently in pain. On removing the head-piece, we found that the padding had become displaced enough to leave the top of his head unprotected. He made light of it however, and I went home with him and sent for a physician, but he died that night. I never used the *palash* again. To add to the pathos of the tragedy, the boy's mother wrote that she received at the same time word of the death of her only other child in the battle of Inkerman in the Crimea.

CHAPTER IV

GERMANY AND FRANCE

AFTER a journey to Dresden and Prague my mother and I returned to Hanover. There we had apartments with some interesting people, Mrs. Bertram and her five attractive and well-educated daughters.

One evening the Bertrams sent for a fortune teller — an old woman. After telling me that I had before me a long voyage by sea, and still another and longer one also by sea, and journeys through dangerous lands, she added that the dangers she foresaw were from the people I should have with me, and that I should never let them go behind me. Soon after this, I went off for a few hours' shooting with my sword master. We went farther than intended, and were away till midnight, when I found my mother in a most anxious condition. The six women had recalled the fortune-teller's prophecies, and suggested doubts as to the character of the sword master, till my mother, though quite an unbeliever in the fortune telling, had become very nervous. In itself the incident is nothing, although I did later make the predicted great sea voyages, and travel in many dangerous lands. It had however a serious side, for, ever afterwards, first in my travels in the mountains of Corsica, and later in Arizona and in China, I was always cautious as to conditions in the rear, and elsewhere, though not from any superstitious reason. I am convinced that it was this that carried me safely through more than one series of dangers.

I now daily attended as many lectures at the Poly-

technic Institute as possible, without reference to subjects, and took notes, as well as I could, all for the sake of getting a habit for future use, and for the language by ear. I gathered together some simple chemical apparatus and reagents, and tried to do things with them, quite blindly: for I had not the slightest knowledge beyond the names on the bottles. Of course I learned very little, and, incidentally, only the fact that I hadn't happened to get together two or three of the necessary reagents, doubtless saved me from being my own fool-killer.

I soon found a field of wider interest. In a second-hand bookstore, looking for an Italian grammar, I happened on an old German translation of Beudant's *Geology*. In the first part it treated of the physical characteristics of rocks. Reading dry descriptions was not at all encouraging: so I collected cobbles on my excursions, and tried, often not in vain, to identify them. Further within the book, came the fossils characteristic of the successive formations and geological periods; and the fossils were pictured. There were some quarries in the neighborhood of Hanover, and there, to my great delight, I found some petrifactions which I thought I could closely identify, and so know the geological period the rocks belonged to. My excursions on foot soon extended further a-field to include the *Deister* Mountains, where in several quarries I reaped rich harvests of ammonites, crinoids, etc.

From a two or three days' excursion I would reach home, a very tired boy, staggering under a load of fifteen or twenty pounds of fossils.

Learning that there was a geologist at Hildesheim, I made bold to go there to see his collection of fossils, never having seen one before. He was Von Roemer, an eminent paleontologist of the time, and he received me

very kindly, showing me drawer after drawer full of fine specimens of forms ranging through all the geological periods. When he saw that I recognized here and there a fossil from the rocks of Hanover, he felt in me the interest that a really great man does in helping the young beginner. During two or three hours he outlined, in a manner adapted to my understanding, the broad outlines of geological history, and, in a general way, the changes from certain older forms to younger ones in successive formations, and their interrelationships. Then he invited me to stay to dinner.

Professor Von Roemer was a member of Parliament, hence I saw him often in Hanover and on one occasion he took me with him on a geological excursion of several days' duration.

During the month of May, wonderfully beautiful that year, I tramped up and down the valley of the Rhine, and into the interior on each side. To my young imagination that month was a delight. The valley was as yet untouched by the wand of modern industrial desecration, the air was still pure, the sky serene, and the castles crowning the hills were still real moss and plant clothed ruins.

Who can describe the effect of it all on the impressionable imagination of a boy fresh from a new land; the charm of the ever-varying scenery, the vine-clad slopes, the echoing cliffs of the Siebengebirge, the castles, the Lorelei-haunted Drachenfels, and the romance and legends of the past.

Then to me there was another interest which seemed to intertwine itself with the romance and poetry of the region. Here for the first time I came in contact with eruptive rocks. Truly I was entering, though gropingly, into geology through the gate of romance.

Bon Cœur, my Newfoundland dog, was always with me, sleeping on or near my bed at night, and tramping alongside by day. Admired by all, he introduced his master to many, so that I never lacked chances to talk with men and women of every class, whether residents or travelers. He was a beautiful animal, hardly full grown, and one of three that had been sent from the royal English kennels as a present to some one of the royal family in Berlin. On the journey this one, supposed to be dying and in danger of infecting the others, was discarded in Hanover. He recovered, and it was my good fortune to purchase him from a lady into whose possession he had come.

About the end of May, I joined my mother and sister, with her little daughter, at Wiesbaden, where we stayed a week or more.

From Wiesbaden we went to Freiberg in Breisgau. Here my brother-in-law met us, and he and I started on a tramp through Switzerland. On this trip we sent a small piece of baggage ahead by post, to be overtaken every few days, while each of us carried, strapped to our shoulders, a change of underclothing wrapped in oiled silk. Thus provided, we could sleep at any chalet on our way, and not be committed to any particular route.

We tramped several weeks — over the St. Gothard; over the Furka and the Gemmi passes to the Rhone and Chamounix, with many minor climbings. During it all I found great interest in the grand scale on which Nature had sculptured to produce such wonderful effects, and to light them with the rose of dawn and tints of sunset. Here for the first time I awoke profoundly to realize the charm and grandeur of Nature in all her moods. It was on the St. Gothard Pass that I was first consciously im-

pressed by the beauty of mountain structure, when I saw the slopes descending from the lofty peaks on each side, in long, sweeping lines, of everchanging curve, to melt together in forming the pass.

Then there was the delightful first sight of the glaciers — great rivers of ice — sweeping in magnificent curves down the steeply graded valleys, fed by similar tributary glaciers, each carrying, on each side, in long, continuous ridges, the load of rock contributed by avalanches; then, too, the loudly thundering echoes of these avalanches! The days and weeks ran pleasantly by without count. Often, at night or on the tramp, we found agreeable company. Even Bon Cœur found it delightful, there were so many goats to chase up the steep, rocky declivities.

It had to end sometime, so we returned to Freiberg, and all of us went to Paris. Here we took an apartment on the Champs Elysées, where my brother-in-law left us to return to New York.

After devoting some time with my mother and sister to the Louvre, I haunted the Jardin des Plantes (Botanical Gardens) and the Museum.

Every day I made my way along the quays on the left bank, dallying at the stalls full of old books or prints, while some had minerals or fossils. I came to know just what minerals each man had, and what he had sold or put in afresh since the day before. In a desultory way I had come to be able to recognize quite a number of minerals merely from having repeatedly seen them through glass in collections. So one morning I noticed something as new and interesting. Labeled as topaz lay, in a broken saucer, two crystals of quartz (rock crystal) colored red by iron oxide in innumerable cracks, and with

these a beautiful crystal, more than two inches long, which I recognized as real Brazilian topaz. The price for all three was two francs! I have that topaz still, and have never seen its equal in any collection. It must have been stolen and just sold to the dealer, who probably bought it for a few centimes, not realizing that it was worth hundreds of francs.

Soon after arriving in Paris, I joined a small class for private instruction in geology by Charles d'Orbigny, a little gentleman covered with snuff, the brother of the eminent paleontologist Alcide. We met every day at the Jardins des Plantes; and, sometimes, in pleasant weather, we made excursions near and far to places of geological interest. These were very often chalk pits, and we sometimes had to walk through Paris covered with chalk dust, but reckless and happy in the possession of a load of fine fossils.

At our pension I formed a lasting friendship with an old lady, Baroness de Pailhez, widow of one of the generals of Napoleon I. Although nearly eighty, she was young at heart, full of *cameraderie,* and altogether the kind of woman whose friendship is a boon to a young man. She took me on excursions, and on shopping expeditions.

In January, 1856, I took a room in the Latin Quarter, to be nearer the Jardin des Plantes, but almost immediately came down with a severe cold on the lungs and fever which kept me in bed. Early in February Dr. Chomeill, the eminent lung specialist, examined me and, finding a spot affected, ordered me off to Naples, with a big bottle of cod liver oil and quinine, and instructions to have myself examined every three months. I find from letters sent home, by my mother, that I was supposed to have consumption. The spot was there without doubt,

for it was found in all the later examinations, but doubtless healed, though the bottle was never opened. However, this incident was the start of a series of events that determined my life career.

CHAPTER V

ITALY

We bought tickets to Naples via Marseilles. As everybody said that Bon Coeur could not live long in the heat of southern Italy, I gave him to Madame de Pailhez, who was devoted to him. She gave him to her married daughter, living in a neighboring town. Here Bon Cœur became so great a favorite that because he was a water-dog and there was no stream near, the authorities built a pool for his canine majesty.

The voyage from Marseilles to Naples by steamer was all warmth and sunshine; and I spent most of the daytime stretched out in one of the boats hung along the side of the deck. I don't remember whether the voyage, touching at Leghorn, lasted two days or how many more; I think of it now as one of ecstatic delight, for I had never before been in a Southern atmosphere. The soft coloring of sky and of the calm sea, the brilliancy of the sun by day and of the moonlit night; these were a revelation of the great possibilities of Nature, whose moods could range from the awful grandeur that enthrones the giants of the Alps, to the charm of this languid atmosphere.

When we steamed slowly past Corsica, with its range of peaks rising seven thousand and to nearly ten thousand feet from the blue sea, I was seized with longing to roam in its mysteries, little dreaming that I was to live, twice for months, a life of romance in its fastnesses.

We reached Naples the 23d of February, 1856. I can give the date because I have always remembered it in saying that in that winter the peach trees were in full bloom February twenty-third; it seemed so remarkable to a Northerner. It was morning when we entered the bay of Naples, passing between the guardians of its entrance,—castle-crowned Ischia on the north and dreamy Capri on the south. Before us lay the bay, bordered by brown, verdure-mottled cliffs backed by green hills and mountains; the shores of either side sweeping in gentle curves to meet in the long lowland between Castellammare and Naples. And in this dreamily distant background, the cone of Vesuvius rose with the peculiar beauty of outline that Nature grants only to volcanoes. On this calm morning the cone was a pedestal from which rose lazily the high column of vapor — a pillar of cloud by day, and a pillar of fire by night.

We found a very attractive apartment on the Riviera di Chiaja, facing the sun. The whole blue gulf, the whole varied landscape in all its glory of form and color lay in view, from the towering cone of Vesuvius around the eastern and southern shore to Capri. Neither the fascination of the Golden Horn, nor the charm of the Bay of Yeddo, can compare with this, in all-loveliness of sky and sea, and land.

I think my first excursion was to Vesuvius, which I climbed with my mother. We rode on donkeys to the base of the cone, and thence made the ascent on foot. Of course we lunched on eggs cooked in the hot ashes on the edge of the crater. The descent of the cone was by sliding and stumbling down the steep slope of loose ashes.

I made excursions to the Solfatara, the crater of an extinct volcano, where the rocks were being decomposed

by gases, and various efflorescent minerals were being formed in the process.

I did not know it then, but the experience gained in my many excursions, wholly from my own observations, was perhaps worth the loss of a year at school. Thenceforth I collected and accumulated specimens, hoping somehow and somewhere to learn something further about the story of volcanoes and their deep forces.

At Pompeii the excavation had covered only a small area, and only in a desultory manner; and the trip thither was an experience very different from that of today. At that time one drove most of the way under an endless arbor of macaroni hung out to dry along the sides and above the street. In the afternoon the road was alive with the peasantry in their attractive costumes. *Carricoli* on two wheels, drawn by one horse, carried six or eight gaily dressed men and women homeward bound, while two or more ran behind, holding on by ropes — all gesticulating, laughing, and joking in sign language with those they passed. Beggars in rags, showing horrible deformities or gaping sores, were everywhere. And there was an unending line of boys, running ahead of, alongside and behind the traveler, turning "cartwheels" and jumping "leap frog," in untiring expectation of coppers.

Pompeii, even in its then partial state of excavation, showed much of the life, art, luxury, and vices and sudden death of its people. In Herculaneum, on the other hand, there was evidence of the more refined side of the civilization. The wealth of bronze statuary and of rolls of manuscripts already found, raised hopes that the villas buried under the great streams of lava may yet fill out to us the store of the lost literature of Greece and Rome, and further enrich the world with treasures of Greek art.

We stayed a month or more at Naples, during which I

roamed far and wide around the bay. The stately lines of Virgil haunted me, and lying on the citadel mound of old Cumæ and on the heights of Baiæ I reveled in day-dreams. Those weeks are in my memory one continuous happy dream.

There came, however, one nightmare. Before leaving Paris we had drawn the balance on our letter of credit and had written home for a new letter which should have reached us in Naples, but it had not arrived though overdue. We had spent the money we had brought with us, we were in debt for rent and many purchases, tradesmen had begun to dun; and there was no Atlantic cable. On the 1st of April when I returned to our quarters, I found people on the stairs waiting to be paid. This was a new experience with us, at home or abroad. I had charge of our money matters, and felt responsible for allowing this condition to occur. Retreating into the street, I tried to think out how to act. We knew no one in Naples, excepting the U. S. Minister, and I did not like to go to him. Suddenly, as I walked, I noticed a sign —"*Turner & Co. Bankers.*" In an inspiration of despair, I entered and, handing over my card, asked for Mr. Turner. I was ushered into a room where an elderly man looked at me inquiringly. He must have seen that I was trying to suppress something: for he asked me to sit down; perhaps there was moisture in my eyes, and I found it hard to speak. Then as his expression softened I told him directly the whole story; how we had written from Paris for a letter that had not come, and how we had, in writing later, mentioned that we had written. I told him that, finding people waiting on the stairs, probably for the coming in of my mother, from whom I had kept knowledge of the condition, I had come to him. After I had stopped, while my heart was thumping, he looked at

me a minute, in thought, and then said: "Mr. Pumpelly, how much do you owe?" "I think it must be about a hundred pounds," I answered. Then standing up he said: "Come with me."

Going to the cashier he said: "Give Mr. Pumpelly twenty-five hundred lire." The strain was over, and in thanking him I could hardly control the reaction. He had said almost nothing during the talk, and had asked only the one question. And he had offered no advice.

The new letter came within a week.

When I next visited Naples, after nearly forty years, Mr. Turner was dead, and I took pleasure in telling the incident to his son, who then had the bank.

The date we had set for going to Rome soon came. The day before leaving, I went to a *café* and, while enjoying an orange sherbet, missed a stick-pin that had been a present from my aunt, and which I valued. I thought I had had it on in the cab that had brought me there, and I looked for it in vain on the sidewalk; then remembering the number of the driver, I went to the Chief of Police, who told me to come the next morning. When I returned, he said he had the man, and ordered an attendant to bring him in. The driver was brought in handcuffed. In a very brutal manner the chief demanded that he give up the pin, but the man protested his innocence, saying: "The signor will remember that he left his umbrella in the cab, and that I took it to him in the *café;* if I had been a thief I would have kept the umbrella." I believed the man was innocent, and said so to the chief, but he ordered him back to his cell, telling him he should never leave till he should give up the pin. When I protested, the chief insisted: "He stole it and has doubtless got rid of it; I have confiscated his horses and cab." From the way this distributor of justice spoke the words, I knew

there was no hope for the poor fellow; like those of the patriots of 1848 who had not been flogged to death or hanged or died in prison of typhus, he would die slowly in a filthy cell. The Chief of Police would inherit the horse and cab. I reported the incident to our Minister, but he said it would be useless to interfere, there was no hope for an Italian who once came into the hands of the corrupt police except through the influence of the *Camorra* which would be exerted only in favor of one of its own members. Let us hope that this *veturino* lived till, four years later, the red-shirted liberator opened the prisons and gave him a chance to knife the Chief of Police.

I believe we stayed about a month in Rome. However long, it was a time of new experiences and new sensations. Much of my time was passed among the ruins and on the Campagna. I found pleasure in searching for colored marbles in the ruins of the palace of the Cæsars. I loved to roam among the tangled vegetation that still covered the remnants of villas and baths. Ignorant of all but the mere outlines of history, I would lie on the high top of an arched wall dreamily basking in sunshine among flowers and grass, delighting in the beauty with which Nature clothed the decay of greatness.

With my mother and sister I visited all the galleries, churches, catacombs; but while they interested me, I was too inexperienced really to appreciate pictures, statues, or architecture.

We found ourselves always coming back to the Colosseum. Plants still covered its outlines and grew out from its walls enriching its grandeur with tangled verdure. There had, as yet, been no excavation; the great arena was still intact, except where time had left openings into dark underground passages.

It was its grandeur that brought us there to sit in the

full light of the sun; but in moonlight it was the fascination of its darkened arches above, and the sense of mysteries and danger below our feet: for beneath were supposed to be the lurking places of robbers.

One midnight I was there with my sister. Our way back lay through the as yet unexcavated Forum and up the long ascent north of the Capitol. We were talking, and had not noticed a challenge when its repetition, and the click of a gun-cock, made me shout *ami* in time to save my life. Rome was then occupied by French troops, and was under martial law. Only a short time before, a young Englishman, climbing the steps from the Piazza di Spagna at night, had been shot and killed by a sentinel for not answering the challenge in ignorance of the language.

CHAPTER VI

IN THE MOUNTAINS OF CORSICA

One beautiful morning in Florence, whither we had journeyed from Rome, I awoke with a longing to wander forth for a whole day; and saying that I would not be back till night, or the next day, I went off to go by train till I should see some attractive region. Nothing tempted me to get off before the end of the railway at Leghorn on the sea. Here I thought to stay till there should be an afternoon train to Florence. The sea attracted me, and I wandered away from the city to get into the salt water and to look for shells. On my way back I saw a steamboat which they told me was about to start for Bastia in Corsica — a trip of only a few hours. This decided me, and I went aboard, not realizing where this decision was leading me. I thought merely to see Bastia, and take the boat again on its return trip. But soon after landing, seeing a door plate marked "Consulate of Great Britain," I entered to get some information, and was very pleasantly received by the Consul. He had lived many years on the island, and was able to tell me much about its history, its primitive people, and the wonderful scenery of its mountains. The Consul excited my interest so much that when he added that I ought not to leave without going by early coach in the morning to see the town of Corté in the mountains, I went directly and engaged my passage thither, intending to come back on the return trip and take the night boat to Leghorn. All

this seemed so easy and so delightful. When I told the Consul that I should have to draw some money on my letter of credit, he took me to a local banker, telling him to let me have what I needed; and, taking the money, I left my letter with the banker for safety in the event of a holdup of the stage. I slept in the inn, that is I thought I was going to sleep sweetly after a good dinner, but my dream was that I was burning in hell. I was; and awoke throwing off the covering. There was a broad, dense column marching from the footboard to the head, all moving to disappear under the pillow. Gathering the mass in the undersheet I rolled that army up and — but it isn't necessary to tell what I did. Then I managed to get through the night on the floor. Evidently the natives were immune, and I might as well say here that my own experiences in Corsica and later have made me immune as regards most of the insects that claim intimate acquaintance.

The Consul had given me a letter to a Mr. Parodi — a merchant of Corté. When I arrived he was just sitting down to breakfast and asked me to join him. From him I got much more information about the island, and when he ended by telling me that I ought not to turn back without going on by a stage that was soon to start, to where the road crossed the pass at the foot of Monte d'Oro, and that he would give me a letter to the chief of the Forest Service, who lived just there, I threw my resolution to the winds, and went on, having written to my mother saying that I might be away several days.

A drive of several hours brought me to the pass. The road lay ascending through a pleasant cultivated country, with villages perched on craggy hilltops, as I have since then seen them in the Ligurian coast and in the Khabile country of northern Africa. At first for a long time we

passed many groves of large chestnut trees; but as our way neared the higher range, the scene changed; the lofty Monte d'Oro and Monte Renoso towered in the distance, and later we entered the superb forest of Vizzonova, of larches great in height and thickness. On the pass I got out at the new wooden house of the Chief Forester. That official was absent, but his wife read the letter and welcomed me; her husband might not return till the next day, but he would certainly wish to have me wait for him, and she would try to make me comfortable in the meantime. Indeed there was nothing else to be done: for the stage was already out of sight.

I found in Monsieur S—— a very agreeable and highly educated man. He gave me a frankly cordial welcome, and suggested that we should climb Monte d'Oro the next day. Then we sat down at his work table and talked. With a map before us, he explained his routine of work and the broad outlines of forestry. After this, producing a large topographic map of Corsica, he pointed out the important features of the island. After an early supper we had a long talk about America, the *École Polytechnique,* the French School of Forestry, and tales of Corsican life; then Madame S—— sang, and I went off to dream of the romance of this wonderful island.

The next day, because the mountain was draped in clouds, Monsieur S—— took me to see different interesting points. We climbed up deep gorges, where torrents foamed and roared, now jumping from rock to rock by the edge of the stream, now climbing to walk among the tall larches along the top of a cliff high above a roaring cataract.

The next day we climbed Monte d'Oro. For some time our way lay among majestic larches and pines; then

as it rose more rapidly the trees became smaller, and the growth thinner, and we came out into the region of the *macchi* or low bushes, and from this on to the bare rock and a tough climb to the top, and to a view startling in its grandeur. The whole structure of Corsica, in wonderfully sculptured relief, lay spread out beneath us, around us, and stretching in all directions to the sea. Our outlook was from one of the five lofty peaks that rise, massive monuments, on and far above the sinuous backbone of the island; and that island an emerald set in a sapphire sea.

Our peak, reaching upward into the clouds, was a center of terrific thunderstorms, and on its rocks we saw polished surfaces, which we thought must have been glazed by the heat of lightning. Even while we stood on the top, clouds gathered, shutting us out from the world near and far; again there came a great downfall of hailstones, about the size of peas, but large enough to drive us to the shelter of a rock. After it was over, and we were hurrying down, we found the hail gathering like water in little rills to unite in larger dry watercourses, as we had seen a day or two before from below.

When, at breakfast, I told my friends how much I would rather explore the mountains than return at once to Florence, Monsieur S—— said: "Really you ought at least to see Monte Rotondo and its shepherds, perhaps its bandits too; it wouldn't take long, and I can arrange your route and for guides."

Then he told me about Monte Rotondo, its primitive shepherds, the flocks of wild sheep among its snows, and its gorges cleft into dark depths down its sides. As he told of these, I saw my resolutions to return gradually fade away till they were lost to sight.

Monsieur S—— gave me a letter to a forest guard, on

the way to Monte Rotondo, telling him to get donkeys and a guide for me. A man with two donkeys was brought up from the nearest village, and bidding good-bye to the friends who had received me so warmly, I left for new sights and sensations. Before leaving, however, I wrote a letter to my mother, explaining my delay and my plan for further absence; this letter was to be handed to the driver of the *diligence*.

For baggage, I had only a cloak, my hammer, and a hairbrush, and tooth brush, both bought at Bastia. I remember little of the journey, except that before evening we came to the modest house of the guard, who was a Corsican. Fortunately he spoke French: for the Corsican dialect differed much from Italian. He and his wife were very hospitable, and prepared a very welcome supper.

When he heard that I wished not only to climb Monte Rotondo, but also to spend several days in exploring it, he said it would be well to go to a village on the way and there get two men whom he knew, as guides, and some provisions.

That night bears a very red letter in the calendar of my life. Being very tired, I slept a deep sleep till long after midnight, when I awoke in agony. My groans brought the guard to my side.

"What is it, *signore?*"

"I am burning, please bring a candle."

"I have one, *signore.*"

"Light it quick!"

"It is lighted, *signore.*"

I was blind; not only was I burning from head to foot, but my eyelids were so swollen that it was hours before I could see. Then I swore an earnest oath that never again would I sleep in a Corsican bed. It was a wise

vow, though it led to many discomforts. That bed, too, had seemed so attractive when I first saw it with its clean sheets.

Early in the morning I was at the village, and had engaged two men indicated by the guard. The supplies were a large quantity of hardtack biscuits, coffee, several big gourds of wine, and some bowls and spoons. In my inexperience, I left all the arrangements to the men.

In the meantime I observed my guides with a slight feeling of uneasiness. They were alert and well built, but their shaggy black hair sheltered dark, somber visages and piercing eyes suggesting the savagery of the primitive man. There surged up in my memory the words of the fortune teller of Hanover: "The danger I see is from those with you in strange lands; never let them go behind you." Having heard much of the Corsican bandits, and seen Calabrian criminals of appearance similar to these men, it occurred to me that here, if ever, such a warning might be fitting. But when I began to talk with them about the road, they looked me straight in the eye, and the frankness of their bearing disarmed any suspicions; I felt that they could be trusted. Fortunately they knew a little French, and with this and Italian, we managed to understand each other.

At first our way lay through the great forest of larches and pines, whose trunks, three to six feet in diameter, towered a hundred and twenty or thirty feet above us, the larches in tall spires, the pines with spreading tops. Mingled with these were superb oaks and beeches.

As the valley narrowed to become a deep-cleft gorge, we climbed slowly to the highland by a path along the edge of the precipice, and so narrow that my sensations were divided between trust in the skill of the donkey, and

fear of the danger of a misstep. As our route brought us to higher ground, we came at last out of the forest into the open highland, where the mid-declivities of the mountain were covered with a dense growth of low bushes; from some of these the air was filled with a spicy fragrance. Continuing and ever ascending, we wound our way among bare rocks, and suddenly saw in the near distance what seemd to be groups of piled stones. The guides halted and shouted. Some men, shaggy, wild-looking beings, came out and, welcoming us, led the way through a number of formidable dogs, to their home. This was not to be our place for the night, and after accepting a drink of milk we went on. The path became steeper, the great bare mass of the mountain rose before us, and the noise of a rushing river came up from the depths beside us. Before long we saw smoke and again a group of cairns, and again the guides halted and signaled, and we were welcomed.

The home of these shepherds consisted of several huts with walls of loose stones, perhaps four feet high, and nearly flat roofs of tree trunks.

There were no women or children, the men looked even more shaggy than those at the first encampment, but their welcome had the true ring of hospitality.

The afternoon was drawing to an end, and the sheep were being milked. The shepherd who seemed to be my host led me to a stone at which stood a wooden pail with about two quarts of milk, and beside this some bread freshly made from chestnut flour, and some cheese. "Eat," he said, "it is the best we have; to-morrow we will give you *broccio*." Being hungry, and fearing to offend by eating from my own provisions, I obeyed, and found the sheep's milk delicious, so too the bread and

cheese. After I had finished, there remained perhaps a pint of milk, and I noticed that the pail was set before a dog who soon emptied it.

The sun had set behind the high crest of the range, the shepherds sat in a group, smoking pipes, some silent, others talking with my guides — questioning them, I thought, about the stranger that had cared to climb these rugged heights. When I joined the group, they made a place for me. As I listened, trying to understand something in the half-familiar language, it came to my mind that I had dropped into a stage of society that had come down unchanged from remotest time: for these people were self-sufficient, needing absolutely nothing beyond what their own efforts produced — cheese, milk, and clothing from their goats and sheep, and bread from their own chestnut trees in the valley. They looked quite capable of taking whatever else they might want wherever they found it. And yet their frankly offered hospitality and air of straightforwardness inspired confidence.

In the twilight the group scattered, and the old shepherd who was my host led me into the hut. It contained one room, ten or twelve feet square, with no visible furniture — a few gourds and some dried meat hanging under the roof; in the center a small fire on the earthen floor. In vain my eyes searched the obscurity for bedding, till the shepherd, pointing to the floor, said:

"This is our bed; *siamo poveri* (we are poor)." There were possibly eight of us all told, and the others were already stretched out with their feet to the fire, with no covering, and nothing under them but the thickness of their ragged clothes. I did not tarry; the dense smoke, that found no outlet except through the low door, blinded my eyes with an intense irritation; so like the others I threw myself outstretched upon the bare ground,

thanking my stars that I had at least a cloak. Once down, I found the air tolerably free from smoke. Once more the host spoke: "*Dormite béne* (Sleep well)," and all was silent. In spite of my fatigue I lay long awake. The novelty of the life, the wild surroundings, the hardness of the ground, brought varied sensations; and I was conscious of trouble brewing within, which soon developed into a severe pain. No one had warned me of the chestnut bread which had seemed so innocent and sweet. Then too the absence of a pillow was intolerable, as well as what smoke remained near the ground. At last there came the happy thought to get my saddle for a head rest, and I went out into the night. There was Nature, Nature sublime, awful, silent. The still low-hanging moon cast a weird light over the far-stretching scene, and bathed the giant pyramid of the mountain with a silvery brilliance; the towering mass of rock seemed nearer than by day; its snowy top shone white, and all the sculpturing of the varied surface stood out in clear relief of light and shade.

After again getting my feet near the smoldering embers, and the saddle arranged for a pillow, I slept till, with the dawn, the life of the camp began.

Thus ended my first night with Nature and primitive man. I looked eagerly forward to more.

My host had promised to give me *broccio* for breakfast; I wondered what it could be. When at last it came, I saw a neat basket-bowl filled with a snowy-white substance lying on leaves. It looked something like our cottage cheese, but it was a dish for the gods. It was made in some way by curdling the fresh, sweet milk of sheep. I had again a pail of milk, which with the unused remnant was handed to a dog, and I suspected would be used again unwashed.

It was my ambition to climb to the mountain top, and to be there before sunrise. The shepherds told me that it was too early in the season, and moreover, it would not be practicable to camp on the top: it would be better to make an early start, and make the whole trip up and back by day. After much discussion it appeared that we might camp below the summit, near a little lake: so after breakfast with my two men and one of the shepherds we started on foot. Each of the men had a bag of food slung over his shoulders; I carried my cloak and the hammer. The day was perfect, the sun brilliant in a clear sky, and the mountain air invigorating in the freshness of the morning. We had to climb for several hours over foothills, till, coming around a corner, we looked out upon a great amphitheater scooped out of the whole side of the mountain. At its foot, far below us, lay a little lake of sapphire blue ensconced in a green, grassy meadow. A field of snow covered the rest of the amphitheater, sweeping downward from below the summit, in ever-gentling curve, to spread out at the bottom near the lake.

I did not know till later that such amphitheaters were the gathering points of the high mountain snows out of which are developed glaciers.

In the early morning the climb to the top was, as I remember, quite difficult. The light of the moon made it possible for the shepherd to choose the best way, though we often had to cut foothold in the hardened snow or ice; but we reached a spot a little below the top just before the break of day.

Here we waited till the first signals of dawn appeared in the eastern sky. As I remember it, the sky was clear, but from below was rising a mist which partly hid the horizon as the sun rose after we stood on the summit.

What I remember of the first moments, is standing against the jagged pinnacle that formed the very top and, looking out to the west, seeing a gigantic reproduction of myself — my shadow cast by the sun upon the cloud of mist. I had heard of the "Spectre of the Brocken" in the Hartz Mountains; here I was the ghost of Monte Rotondo.

On the way down we made a detour to visit the little lake. I remember it as nestling in a grassy meadow, its calm surface reflecting the field of snow descending between the rocky walls of the amphitheater. Best of all, I remember the swarms of mountain trout that darted out at every step along its edge. Of these we caught a large supply which gave a welcome addition to the evening meal.

I don't remember how long I stayed in this part of the island, but it must have been several weeks. On foot with my men and a shepherd from this *bergerie,* I made excursions in every direction — along the main crest and the summits of the spurs, and climbing high peaks or descending into wild gorges. And I made at least one more climb to the top of Monte Rotondo.

We usually made camp for two or three days, and, like savages, got our fill and new strength for the rough tramping. It was the life of the outlaw of the vendetta, excepting only that we were not in hiding, and not on the lookout for an avenging pursuit. It was, for me, a new life, fascinating in its strangeness, in the wild beauty of the mountains and the freedom from forethought as to where we should lie down at night, or of care for conditions of weather.

The chief, untiring pleasure was the adventure, but with this was the interest in the mountain forms and in the rocks. The impression that remains is that the whole

region was granitic. I remember that I was particularly interested in the frequent occurrence in the granite of veins of quartz and feldspar, and of larger dikes of different rocks which were quite new to my ignorant eye. These I observed closely, making minute sketches of all details of structure and composition, and collecting small specimens.

CHAPTER VII

IN THE HAUNTS OF OUTLAWS OF THE VENDETTA

In the course of these tramps I soon came to understand the Corsican dialect, and to be able to talk in it with my men, and with the shepherds of the *bergerie*.

I liked these people. Their rather somber faces, under a dark mass of often curly hair, were somber only when at rest, but lighted up in talking. As soon as they came to know me better they gave vent to curiosity about myself, my belongings, my people, and my reasons for doing this thing and that. They were not impulsively communicative about themselves personally, but talked freely about the mountains and their life. While I liked them, I felt that it would be bad to have them not like me, and that they might be dangerous as enemies. However, during my wide experience among these mountaineers, I never had a disagreeable episode. There was this first year, one point on which I soon became aware that they maintained reserve, and that was the vendetta — the subject that was so intimately ingrained in their passionate nature. At first I thought that they feared I might be a spy of the government, but later I knew that could not be the reason.

In my excursions we often passed or slept at night in caves under masses of enormous rocks. These were generally coated with smoke and creosote, and, because they were not near pasturage, but always in very hidden

places, I was curious to learn their history. After a while my men told me that they had been hiding retreats from the vendetta and from the police.

I will mention here one benefit besides the shelter that these caves gave me. Before I left Paris, Dr. Evans, the dentist of the crowned heads of Europe, had filled two of my molars, and had done it so carelessly, without protecting the nerve, that I had frequent toothaches for a year. Before I came to Corsica the filling had come out and decay was progressing with the pain. I had been told that creosote relieved toothache, and when I found this oil in drops on the roof of a cave I soaked it into a little ball of paper, and found great relief by prying it into my teeth. Later, while traveling in the island on horseback or on donkeys, by making a cornucopia of brown paper, lighting the open end, and blowing the smoke through a little hole at the small end onto a stone, I got enough of the much prized creosote oil collected to stop the pain. I even managed to do this in the saddle while riding.

The time came when I felt I must leave my hospitable shepherds if I wanted to see more of the island, and I think that the regret at parting was mutual.

My wish was to climb Mount Baglia Orba. I don't remember what made me choose this particular one of the several peaks I had seen from Monte Rotondo. It may have been the melody of its name, or the rugged outlines that showed above the intervening mountain chain, or it may have been what I had heard of the country I should have to go through on the way.

The route lay due north till we reached the river Golo, and then up this valley to the source of the main tributary of that stream.

We camped several days near the foot of the peak of Baglia Orba, exploring the crests and valleys. Every-

where the rock was porphyry, in varying red and brown shades. Fortunately I had, as on Monte Rotondo, added a local shepherd to my party, and had come provided with bags to hold specimens.

As I remember Baglia Orba, its peak rises as a steep horn with almost vertical sides; at least this is the way I have it sketched in my notebook. The shepherd led me up what he said was the only way. The last stretch of the climb was up what seemed like a chimney, open on one side, carved in the face of the cliff. We had to work our way, I think at least thirty feet, up this vertical flue, with the remembrance of my climb at West Rock and the uncertainties of descent always in mind.

In exploring one of the valleys descending from this mountain, I noticed that near the bottom the rocks were worn smooth and almost polished in a way that recalled what I had seen at the foot of a glacier in Switzerland, and that they were grooved, and scratched with lines all running in one direction. The significance of these, their relation to glacial activity, did not occur to me then: it appeared only as a puzzle to be explained, possibly by the grinding of rocks moved in the torrent.

From Baglia Orba we followed the crest northeastward to Monte Cinto, one of the highest of the Corsican peaks.

We camped below the summit of Monte Cinto, and near the foot of a broad amphitheater covered with snow from high above down to a lakelet of clear, blue water at the bottom. In returning to camp from tramps along the high crest, we found excitement in coasting down on the firm surface of the snow.

At another point we came, one day, upon a cave formed among a number of immense rocks fallen from above. It had a small entrance, and was blackened on the inside by the smoke of many fires.

My shepherd guide told me that, only a few years before, this had been the scene of the killing of the last member of one of the terrible gangs of bandits — the Arrighi-Massoni. The story was so dramatic that it made a strong impression on me, and I heard it later from several sources. It is so characteristic of the terrorism that blighted the industry of this beautiful island, that I shall give it in outline from the authentic report of M. Felix Bertrand, *Premier Avocat Général à la Cour imperiale de Bastia.*

The End of a Bandit Gang

Two brothers, Pierre Jean and Xavier Massoni, and Mathieu Arrighi, who had been soldiers, were the remnant of a larger band who had long terrorized the district of the Balagna, and had always escaped pursuit. In time they sought refuge in the Niolo where the shepherds were less friendly. Here one day they killed two goats for supper. The owner pretended not to object, but followed the bandits at a distance till he saw them camp at a cave in a remote part of the mountains between Corsica and l'Aquale. Then he hastened to notify the *gendarmes* at Calacuccia, about five hours distant. In the meantime the bandits had roasted their goats, Pierre Jean Massoni went to sleep in a crevice in the rocks, and Xavier and the other lay down in a neighboring cave.

At daybreak two brigades arrive. The *gendarme* Muselli, separating from the others, climbs upon a rock dominating the place, and seeing only the feet of Pierre Jean, in order to be sure, he throws a little stone, then another and a third. Pierre Jean jumps up, yawns, looks around, and seeing Muselli, draws a pistol; but the *gendarme* fires and the bandit rolls over dead.

The sound of the shot, repeated by a succession of echoes, brings three *gendarmes*. While they are hurrying up, a man is seen running off in the gorge below, but as they approach, he jumps behind a rock, fires and kills the *gendarme* Albertini, then fires again and wounds Orsattoni, and starts to run, but falls, hit by a ball from Corteggiani, jumps up again, and disappears among the dense bushes.

The *gendarmes* are in doubt what to do; one bandit is dead, one has escaped; where is the third? They decide to form a cordon around the little valley, and watch. In the morning all is quiet, no noise, no clews. Discouraged, they begin a closer examination of the locality. The little valley is wild, narrow, and covered with brush, and its sides are masses of enormous rocks fallen from above, and clothed with plants that hide the interstices. On a little tongue of land between two rivulets, there rise two great trees. One of the *gendarmes* is hidden in the foliage of one of them, and, on a sign from an officer, the barrel of his gun comes slowly out, and two explosions occur at once; the *gendarme* falls, killed by a shot from the bandit's gun.

All is explained, but it has cost the life of a soldier. The bandit is there, watching and waiting. His cave is on a precipice inaccessible on three sides, and consists of two small apartments communicating by a narrow aperture only passable by climbing. The bandit controls the situation. In case of assault, he can retreat to the inner cave and kill, one by one, the men climbing the passage. He has water and a little bread, and abundant ammunition.

Forty-eight hours pass. At daybreak the sound of a drum announces the coming of a troop. Several companies arrive in the valley, and are distributed over the

ground; the *corps de genie* itself has been sent to help exterminate this scourge. A *gendarme* manages to get into a safe place just below the cave; he calls upon the bandit to surrender, promising him his life; tells him he is surrounded by a circle of iron; that all points are guarded, and there is no chance of escaping through the net. He asks whether he is not Xavier Massoni. This excites the susceptibility of the bandit, who answers that he is only the "little Arrighi" (Mathieu). "But you, who are you, and what are you doing down there under that rock that protects you?"

"I belong to the brigade of Corsica; I'm a Corsican like you, and have my share, too, of courage."

"Yes!" replied the bandit. "Well, since you are so brave, show the top of your helmet, or just a button of your uniform."

During this dialogue, soldiers climb to the platform on top of the cave, and make a hole which they fill with thirty pounds of powder, and light a fuse; there is a terrible explosion, the ground trembles, a mass of rock falls and great stones fly in the air. While all stand watching for the effect, they are greeted by a loud, jeering laugh from the bandit, who appears for a moment in the midst of the smoke.

Night comes. No one knows what is to be done. They cut pines and brush, and tumble them from above to make a pile in front of the cave, and on this they drop burning brush to smoke Arrighi out. It makes a great fire, lighting up the valley and the groups of soldiers, the trees, and the stream in which still lay the body of the *gendarme,* which no one had ventured to approach. To keep every one on the alert, they call from time to time, from post to post: "*Sentinelles, prenez garde a vous.*" As soon as the last call has sounded, Arrighi

takes it up mockingly, and cries, "*Sentinelles prenez garde a moi.*" He jokes with the gendarmes, and even threatens them: "If I escape I will be worse than Theodore (a notoriously cruel bandit). I killed one of you this morning; I will kill the others like wild beasts." Then calling to a *gendarme* from Calacuccia: "As for you, I had you at the point of my gun, and would have killed you while you were eating if I hadn't seen your little boy by your side."

Then they hear the bandit moving rocks to make a barricade in the cave. He keeps awake night and day, he has now neither water nor food. To refresh himself, he digs up wet earth to cool his cheeks.

The fourth day arrives. They tell the bandit of the formidable siege prepared for the morrow. Nothing daunts him: neither thirst, hunger, nor fatigue conquers this nature of iron and steel.

At two hours after midnight, when least expected, he plunges from a height of more than twenty feet, and bounds off like a panther. A hundred guns fire on him at once, but with poor aim; he clears two sentinels, and stops at the third, wounded, and falls among a mass of rocks.

"Surrender to me," cries a *gendarme.*

"Come and take me."

While they are preparing to kill him without sacrificing another *gendarme,* he grows impatient.

"Would you like to aim at the head?" he shouts, and rising, faces the soldiers proudly, then falls riddled with bullets.

We have seen that on the first morning Xavier had escaped. So great was the terror, and powerful the influence, of this man, that although separate from the band, and wounded, he still found men, of Corsica and

l'Aquale, who took him on a mule to the grotto on Monte Cinto, and a doctor to treat his wounds. An old shepherd brought him milk and foliage for bedding, and from him, he learned of the death of the other two.

In the meantime, Lieutenant Virgetti with his troop overran the Niolo, arrested those who had helped the bandits, intimidated the people, and at last learned where the fugitive was hidden. The grotto was surrounded. The *gendarmes* began to close the small entrance by throwing rocks into it, hoping to bury the man alive, but were stayed by the appearance of the barrel of a gun through a small opening. However, when the soldiers began operations for blowing up the cave, Xavier agreed to give himself up. He came out, throwing away his pistol and discharging his gun into the air, but was killed by a shot from a *gendarme* who had not been notified.

CHAPTER VIII

BY DONKEY TO AJACCIO

In August I left the region of Monte Cinto and Baglia Orba.

As I intended to descend to the western coast, and make my way to Ajaccio, we followed the crest till we found a trail going thither, and after two or three days of leisurely traveling, the braying of our donkeys told us that we were nearing a village.

Looking back over an intimate acquaintance with donkeys the world over, I maintain that the little one of Corsica could easily carry off the prize for vocal music. He has reduced it to an art — a science, a profession; while his kind elsewhere — whether big or little, erect-eared, Soudanese or flabby-eared — are only amateurs. Silent for weeks in the mountains, he reserves his efforts for sympathetic ears. On the journey, suddenly the scent of donkeydom comes wafted on the air. At once every tail in the train hitches slightly up, every mouth opens and issues a note of happy apprehension. After a few minutes, the tails rise a little higher; also the note. As we approach the village, the intervals grow shorter, the notes longer; we are entering the crowded piazza; it is now that the orchestra rises to its majestic height in a grand and long-sustained climax. I know they are boasting:

"Lo we went forth, lone donkeys; behold! we come now each with another on his back."

At my first experience of this kind I told my men to stop the braying; they each caught hold of a tail and pulled it down; those donkeys went suddenly and sadly silent. Alas! the voice of mine rose more proudly, and the solo, with me on top, made the assembled crowd so happy that after that, before entering a village, I made my men tie heavy stones to the donkeys' tails.

It was already twilight as we came through a narrow street into a little piazza where the natives, and two or three *gendarmes,* were loitering around the rough fountain. It was raining, and the noise of distant thunder gave promise of a bad night. I looked around at the houses, but they only recalled unpleasant memories, so I told my men we would go on till we should find a place to camp where the animals could graze.

"*Béne Signore,*" one said, "I know a place a few miles from here." Without stopping, we passed by the wondering group. The night closed in; the rain grew to a downpour. We had gone a mile or two from the village when out of the darkness there came the loud call: "*Arrêtez!*" and, by a flash of lightning, I saw two *gendarmes* running up from behind. One of them managed to light a lantern, and holding it up to look at me, "Who are you?" he asked.

"I am a traveler going to Ajaccio."

"Where do you come from?"

"From Monte Cinto."

"You are not a Corsican."

"No, I am an American."

"Why did you not stop for the night in that village, since it is far to another?"

"Because I prefer to *faire bivouac.*"

"*Bien!* I arrest you; come with me."

It began to look serious.

"You are not on duty. You have no *gendarme's* hat," I answered at a venture.

He turned to his companion and took from him the proper covering. Then I ventured again:

"Where is your saber?"

He showed the hilt.

Then remembering my passport, I held it out.

"If you will look at this, you will see that I am an American traveler."

It was a formidable document to be studied in a thunderstorm. The three folio pages had been filled with German, French, and Italian *visés,* and had then been folded and bound in with a booklet whose leaves were now half-filled with more *visés.* The brigadier looked it carefully through, evidently tracing the route of my travels.

"When did you leave Genoa?"

"I have never been in Genoa."

Then he questioned my men, who told him that they had been with me for more than two months and that they had been engaged for me under instructions from the Chief Forester of Corsica. This tallied roughly with my *visé* at Bastia, and the brigadier apologized for having stopped me. Then he explained that he had instructions to look out for an Italian who had been connected with an uprising in Genoa three weeks before; and so he let me go my way, and, much bedraggled, went back to what he doubtless thought more comfortable quarters than I should have for such a night.

After we had ridden slowly for half an hour through a drenching rain, a flash of lightning showed a grassy field with scattered trees and, just beyond and deep below, the sea. It is still vividly before me, that scene of wild grandeur flanked for a second out of the dark

unknown. This field was our camping place. The men said we must leave before daybreak, because the trees were chestnuts and the owners would come before daylight from a village farther on to gather the fallen nuts. So turning the donkeys loose to graze, we three threw ourselves down in the deep grass to sleep, with small prospects of a restful night.

We had only just lain down, when there came a flash and a crash so deafening and blinding that I sprang to my feet in terror, and threw my hammer far from me lest it might attract the lightning. Then I stood fascinated by the mingled terror and mysterious magnificence of the elements at work. Each vivid flash showed the whole outline of the coast, its cliffs and rugged mountains on one side, and the far-reaching sea on the other. And between these flashes sounded the deafening boom and crash of thunder. Wet through and with only my cloak for bedding and cover, I lay down, and fatigue brought sleep.

The dark was dense when the men waked me. We spread out to advance in a line to find the donkeys, but after we had advanced only a few yards, a flash of lightning showed that we were within a few feet of the brink of the cliff; we saw in that instant the sea hundreds of feet below us, and heard the roar of the breakers dashing against the rocks; only a step from the real unknown, and a fit ending of this adventurous night. The storm was over, but by the light of occasional flashes we got together the donkeys and went our way.

At Ajaccio I found a comfortable inn and a good dinner.

The next day I had the good fortune to make the acquaintance of the young head of the Pozzo di Borgo family. He was perhaps two or three years older than

I; and during my stay at Ajaccio, we were together much of the time.

He took me to see the house of the Bonapartes, in which Napoleon I was born. I remember it as being two or three stories high, and roomy, but bare of furniture, and unoccupied. Taking me through it, Pozzo di Borgo opened a door, and entering said:

"In this room Napoleon was born."

Here was the beginning of the drama on whose scenes the curtain fell at Moscow — Waterloo, Vienna, and Sedan.

Pozzo di Borgo told me of much that preceded the birth of Napoleon. The father, Carlo Bonaparte, had voted with Paoli for war with France, against annexation. The French troops were advancing across the island, and the Bonapartes with other principal families had to flee for safety. Letitia — the mother — was expecting the child that was to be Napoleon. They fled to Monte Rotondo and lived there among the shepherds till Corsica had submitted to annexation, then they were allowed to return to their homes; but they had to go by rough ways through the mountains, at times having to wade across dangerous streams. In Letitia Bonaparte's condition, only a woman of strength and courage could have succeeded in preserving the fateful life she carried. On such a delicate thread hung the destinies of nations.

The Corsican Brutus

Gregorovius tells of another incident that happened near Ajaccio. It is of tragedy whose terrible pathos throws again a light on the stern moral nature of the Corsican mountaineer. I abbreviate it from Gregorovius's narrative.

During the Genoese rule, two grenadiers of a French-Flemish auxiliary regiment deserted and fled to hide in the mountains of Alata, near Ajaccio, where they claimed the compassion and hospitality of the poor herdsmen.

"Sacred are the rights of hospitality. He who violates them before God and man is, by the time-hallowed usage of our fathers, a Cain."

When spring was come, some officers of the Flemish regiment, hunting on these mountains, came near the hiding place of the two fugitives. The latter, seeing the huntsmen, crouched behind a rock. A young herdsman was pasturing his goats near the spot; M. de Nozieres, colonel of the regiment, went to him and asked him whether there were possibly some fugitive grenadiers hidden in these mountains.

"I do not know," said the herdsman, and seemed embarrassed. M. de Nozieres, made suspicious by his manner, threatened him with immediate imprisonment if he did not tell the truth. Then Joseph was terrified; he said nothing, but pointed tremblingly to the place where the poor deserters were hidden. The officer did not understand him. "Speak!" he thundered at him. Joseph would not speak, but pointed again. The officer hastened to the place. The two grenadiers sprang up and fled, but were overtaken and secured.

M. de Nozieres gave Joseph four bright, golden *louis d'ors* for his information. The young herdsman, on holding the gold pieces in his hand, forgot in a childish rapture, officers, grenadiers, and the whole world besides; for he had never seen pure gold. He ran into his father's cabin, and called together his father, mother, and brothers, and, distracted with joy, showed his treasure.

"How did you come by this gold, my son Joseph?" the

old herdsman asked. The son told what had happened. At every word that he spoke, his father's countenance became darker, and his brothers were horrified and when Joseph had finished his story, the father was pale as death.

"Sacred are the rights of hospitality. He who violates them before God and man is, by the time-hallowed usage of our fathers, a Cain."

The old herdsman cast a terrible glance at his son, and went out of the cabin. He called his whole kin together, he laid the whole case before them, and called them to pronounce sentence on his son: for the latter appeared to him to be a traitor, and to have brought shame on his whole clan and nation.

The Court of Kinsmen unanimously pronounced sentence that Joseph deserved death.

"Woe is me and my son!" the old man cried in despair. "Woe to my wife that she bore me this Judas!"

The kinsmen went to Joseph, and led him to a lonely place near the city wall of Ajaccio.

"Wait here," said the old herdsman; "I will go to the commander; I will beg for the life of the two grenadiers. Let their life be life to my son also."

The old man went to M. de Nozieres. He threw himself on his knees and begged for the pardon of the two soldiers. The officer regarded him with astonishment, at the compassion of a herdsman, who wept so bitterly for two strange soldiers. But he told him that the deserters deserved death, for so it was ordained by the law.

The old man rose and went away weeping.

He came back to the wall where the kinsmen stood with poor Joseph.

"It is in vain," he said. "My son Joseph, thou must die. Die like a brave man, and farewell!"

Poor Joseph wept; but then became tranquil and collected. A priest had been sent for, and received his confession, and gave him spiritual consolation.

It was the very hour when the two deserters were being beaten to death with rods. Poor Joseph placed himself against the wall; the kinsmen aimed well, and Joseph was dead.

Then the old father, weeping bitterly, took the four bright *louis d'ors,* and gave them to the priest, saying to him: "Go to the commander, and say to him: 'Sir, here is your Judas wages back again. We are poor and honest men, and have executed justice upon him who received it from your hand.'"

"Sacred are the rights of hospitality. He who violates them before God and man is by the time-hallowed usage of our fathers, a Cain."

CHAPTER IX

CHANCE DETERMINES MY CAREER

ONE day early in September, on returning from a rambling journey through southern Corsica, upon which I had proceeded on leaving Ajaccio, the diligence landed me in Bastia, and I immediately went to the English Consul. He had begun to be anxious about my long absence; we went together to the banker who had advanced me money, and I gave a draft for the amount and took my letter of credit.

I had seen from Bastia the islands of Elba and Monte Cristo, and the Consul had told me of the iron mines on the former, in one of which the ore was lodestone. It seemed to me that it would be good to go there on my way: it was only a few hours' sail. So I hired a fishing boat and set out in the morning. There was a good breeze, and for two or three hours we sped along beautifully. We should soon be there, the fisherman said. Then the wind dropped, and there came a dead calm. The sky was clear, the burning heat of the sun enveloped us; there was no shade under the flapping sail. I sought refuge in the little cabin, but found it still worse.

When time for the noon meal came, the men brought out a dried codfish, and some bread and oranges and a gourd of wine. The codfish was dipped into the sea and laid flat on the deck, and the upper side scraped to clean it; then it was turned over, with the cleaned side on the quite dirty deck, to clean the other side; then it

was ready to be eaten raw. This was our dinner. I thought it would do, I should have a good supper on Elba.

We were nearly four days standing still on that spot; ten meals of raw codfish, sour wine and stale bread. The intense heat in the motionless air, after months of life in the cool breezes of the high mountains, was unbearable. During all this time, Elba and Monte Cristo were tantalizingly before me. The first day I decided to visit both islands; by the third I felt that Elba would satisfy my ambition.

However, the early morning of the fourth day brought a breeze which landed us on Elba.

I have always been glad that I made this trip, for although I knew nothing about iron mines, I already had the habit of observing carefully, and I carried away a pretty good idea of the manner of occurrence of the two important varieties of ore — the specular in one part of the island, and the magnetic at Calameta. These were the first mines that I had seen.

I have forgotten in what way I reached Leghorn, but I went at once to the Consulate. The Consul was at his desk as I handed him my passport to get his *visé*. He looked at it and then jumped up and faced me.

"Young man do you know that the police have been looking for you for months throughout Europe?"

I was struck almost dumb, and could only stammer,

"I don't understand what you mean."

"I mean that you went away from your mother for a day, and without sending her any word you have been God knows where for four months. You carried off the family letter of credit, and because the London banker has repeatedly written that he has had no drafts from you, your mother has at last concluded that you are dead. That's what I mean."

The tears came to my eyes, as I told him of the two letters I had written in my first days in Corsica, and of others that I had intrusted to shepherds to send via Bastia to Florence.

"Well, they never arrived, and your poor mother is distracted."

There was just time to catch the train for Florence.

In a state of great and remorseful agitation, I rang the bell at the Pension Molini. The maid who opened the door started back with an exclamation. Kind, old Madame Molini, who was near, rushed forward to assure herself that it was really I in my very shabby clothes.

"Your poor mother," she said with tears running down her cheeks, "is in the garden. She sits there all day by herself. She must not see you till I shall have prepared her."

So I waited. It was some time before Madame Molini came back. "You can go now," she said, "I have broken the news gently, there will be no shock."

My dear mother: how well I remember how she put her arms around me and looked at me through tears of joy. Then making me sit by her, she waited for the explanation.

I told her of my letters, and why no drafts had gone to London. She did not upbraid me. She made me stand, and looked me over.

"You have grown since you left. You went away a boy. I think you have come back a man." Then she kissed me.

At Vienna, where we had arrived to make a short stay on our way to Germany, we thought it quite time that the question of my education should be seriously considered. A day or two after our arrival there was

a notice in the morning paper of the meeting of a society similar to our Association for the Advancement of Science. Reading that the sessions were open to the public, I strolled over to listen. At the entrance men were registering their names. I asked an old gentleman if I, being a foreigner, should register. He asked if I were a naturalist, to which I replied that I was not, but that I was much interested in geology. He told me to enter my name and take a card. Then he made me go in and sit by him. During the rather long interval before the opening of the session, he asked where I had studied geology. I answered that I had had no formal instruction, but an interest in it had led me to learn what I could by observation and collecting among the jurassic strata of Hanover, in the tertiary basin of Paris, and in the volcanic field around Naples. I said that I had spent several months observing among the porphyries of Corsica. I added that my knowledge was limited to what I had been able to observe, as I knew nothing of mineralogy except the names and appearances of a few minerals.

My notebook was in my pocket, and I showed some of my simple sketches of details, and one in which I had tried to represent in an ideal manner the relative ages of the different dikes of intrusive rocks in Corsica. My new friend seemed much interested, and remarked that it was a good way to begin. After that he asked many questions about my life in Corsica. When the session was about to open, he handed me his card and took mine. He said he was Professor of Geology in the University of Bonn, and he added that he hoped to see me at times during the days of the meeting. His card bore the name of Noeggerath, the great geologist.

During the following days Professor Noeggerath

showed me much kindness, taking pains to explain many things that were being exhibited at the meeting.

Professor Noeggarath advised me to go to the Royal Mining Academy at Freiberg in Saxony. He said the instruction in geology, mineralogy, and chemistry was of the best. After talking it over with my mother I accepted his advice, which was already very much to my mind, and it marked a crucial point in my life. For had I not met Professor Noeggerath I should probably have gone to a university. Had I done so, my wish for a wider general education would, with my interest in the past, have probably led me to concentrate on history and ancient literature. In any event the whole trend of my life and all that that means, would have been entirely different. All this was determined by seeing a notice in a newspaper and by a casual question put to a kindly old gentleman. I will paraphrase the Corsican injunction for hospitality and say: Sacred are the obligations of courtesy and kindness to the stranger.

My mother and I left Vienna to go to Dresden, the nearest railway station to Freiberg. It was just a year since the day I had left Vienna before.

At Dresden I parted from my dear mother. She had been a comradê in many excursions. Her unbounded faith in me, though not always justified, made for good in me, and her poetic nature and sympathy with my aspirations tended strongly to develop both the imaginative side in me and earnestness of purpose.

I remember well her last command, given between tears and kisses:

"My dear boy, whatever your work is to be, aim for the highest in your profession, and for honesty in your conduct through life."

CHAPTER X

STUDENT DAYS AND PRANKS AT FREIBERG

FREIBERG has been an active mining center certainly since the twelfth century, and probably much longer. On its square, stand houses said to have been built six hundred years ago over old mines. The ground under it, and under its surroundings, is honeycombed with six hundred miles of galleries. A large part of this was done before the use of powder. In my time one could enter galleries whose sides and roofs were hewed with hammer and point to a straight, even surface. Within a radius of a few miles, there were still operating a number of large mines producing silver, copper, lead, and zinc ores. Near the town were extensive works preparing the ores for the local smelting works. These mines were deep, I think one had reached a depth of about 2,000 feet. When I arrived they were accessible only by ladders. Before I left the miners came out on man-engines. These were made by bracketing little steps on the great hewed beams that formed the rods of the Cornish pumps. When one rod went up, the other went down; in the instance of pause you stepped across onto the corresponding step on the other rod, and rose perhaps six feet; and so back and forth holding onto an iron near your head, in the rod. I think this was the first form of man-engine.

I hear now that the mining industry at Freiberg has come to an end, through exhaustion of ores, it is said.

The quaint old town, from which so many memories have been carried to all quarters of the globe, will belong to the past; but in the dark recess beneath, will still be heard the hammers of the gnomes, and there will always wander the ghosts of long generations of miners.

In this quaint old mining town, I spent three of the happiest years of my life. Here as a student of geology and mining I laid the foundation for that expert knowledge which made possible my long career as a mining engineer in my own country and in foreign lands.

Life-long friendships were formed with students from many countries. The professors, in our social gatherings and in the many excursions to neighboring regions, were delightfully informal and companionable.[1]

Much time was spent in the mines, observing the practical application of our lessons in mining, the manner of occurrence of the ores, and the vein structure.

In the first year we had to descend nearly 2,000 feet on almost vertical ladders and, what was harder of course, to climb out by the same route. To protect the head from objects dropped from persons climbing above us, we wore stiff caps of very thick felt.

I saw very soon that my previous training in mathematics had been woefully slighted, and that this would be a serious handicap. Something drastic had to be done

[1] The startling changes in the demeanor and spirit of all classes of society which I noted on a visit to Germany nearly fifty years later would have made the admirable condition described in the text impossible. In my time the men who had made Germany preëminent in pure science were teaching unhampered by politics. Now, there had been made a great change in the methods and aims of education. Many of the greater minds had been brought to the enlarged University of Berlin where, as among the lower schools of Germany, tactfully and through the bestowing of titles, education was gradually both commercialized and diverted to further the aim of Empire expansion that culminated in the Great War.

at once, or I should not be able to take even the courses in surveying and elementary physics. Private lessons would be necessary, and there was no time for these during the day. There came to me the remembrance of how my friend Dunham and I had read Latin every morning, from four o'clock on, in New Haven. So with some difficulty I found a German student who was so desperately in need of money as to be willing to tackle such a job. It seemed easy to me. Perhaps he thought so too. I planned to get up at three, have a cold bath, and be ready at four. That too seemed easy — when I went to bed. The first morning, a continuous succession of loud knockings brought me to the door, and to a realization that it was four o'clock. After this had happened several times, I hired a young man whose business it was to bring my tub of water at three-thirty, pull off my blankets, carry them away, and see to the fire in the big porcelain stove; all this under pain of quick dismissal.

This worked; as a darkey would say, it was "obleeged" to work; the cold water waked me, and coffee kept us both awake. The tutor was much better as a teacher than I as a pupil. He didn't succeed in making a mathematician of me, but he did, during the nearly three years we kept this up, make it possible for me to follow the courses profitably, though by dint of much reviewing by myself, because I lacked the necessary kind of a memory. We had to work at a too rapid pace.

One laughable incident will illustrate the indulgence with which students and student pranks were treated at this institution.

There was an American student, of German descent, who supplied the community with some serio-comic excitement. He was a remarbable marksman with the pistol. His room was in the rear of the house he lived

in, and there were two large courtyards between his windows and the opposite houses. It amused him to pick out, with balls from his pistol, the panes of glass in the windows of one of these houses. One day, seeing a woman hanging out a wash to dry, he fired and cut the clothes-line. The woman, frightened and bewildered at the sight of the clothes on the ground, hesitated, but bravely set to work and restored the line, only to have it broken again at her side; then she fled.

The neighbors, in the rear, watched while this practising continued several days, and at last succeeded in locating the culprit. He was arrested and tried. The case was so out of the order of events in the staid German community, that the court room was crowded. We all went there, but I remember only one incident. The prisoner, who took the whole proceeding as a joke, sat, with his legs crossed, in a chair at the edge of a raised platform near his advocate, who was arguing in defense. When the lawyer, producing his strongest plea, said: "It must be remembered that this gentleman comes from a land where even the principal cities, New York and Boston, are surrounded by savage Indians, and where every man and woman is obliged to carry firearms in self-defense. It is quite natural, where all become unerringly skilful, like this young gentleman, that the use of firearms is thought proper in practical jokes."

At this point the defendant, who was sitting with his chair tilted, burst out with laughter, lost his balance, and went over backward off the dais onto the floor. He got off with a fine.

CHAPTER XI

ANOTHER SUMMER IN THE MOUNTAINS OF CORSICA

I WISHED to spend the vacation of the summer of 1857 in the mountains of Corsica, making the journey via Paris. I wanted to study the geology of the island, in the light of knowledge I had obtained during the past year. I had, too, a longing for the wild life, and for adventure.

I had seen many mouflons and deer, and these added to the temptation: for they were not allowed to be shot.

A few years before my visit, the French Government, in its attempt to stop the vendetta, had forbidden the use, or even the possession, of firearms. The only exceptions were the soldiers and *gendarmerie,* and Prince Pierre Bonaparte who lived there in exile. For every one else, the penalty was the galleys.

I had noticed that some of the shepherds had guns, but no ammunition. So I managed to smuggle in as much powder and lead as I dared to carry, trusting to finding bullet-molds among my friends. Fortunately my examination at the Customs in Bastia was confined to questioning as to whether I had spirits or tobacco. Fortunately, too, I found the men who had been my guides in the previous year, and who were glad to go with me.

In a *bergerie* where I was welcomed as an acquaintance of the previous year, I found that they had some antiquated guns. The eyes of the shepherds opened, with

alternate delight and hesitation, at the sight of the small store of gunpowder and lead that I showed them. They hunted up molds and we made bullets.

Above us towered a lofty mountain, with large fields of snow on its upper northern side. Below us was a deep gorge, with precipitous sides, but which, nearer to the sea, opened out into a still narrow but wooded valley.

Above us were flocks of mouflons. The valley below abounded in deer.

We climbed the mountain and after much search saw a troop of mouflons grazing below the snow. They were, however, out of range, and the wind was in the wrong direction. We made a descent and a long detour to get into a better position. After much climbing and creeping we caught glimpses of them almost within range; then, just as we were ready to fire, we heard a sound between a cry and a whistle, and saw the whole troop scamper away. The men pointed out a solitary mouflon standing on a distant eminence; this one they said was a sentinel, and that one was always placed to watch.

The shepherds proposed a *battue* for deer in the valley below us. About seven or eight miles down the valley it was crossed by the road along the coast. The plan was to send men down to near the road, to drive the deer up the valley to where it narrowed into a canyon. Here we should be able to intercept the game. Near the road were two high points from which any one moving on the road could be seen. To each of these points a man was sent to pile materials for a fire, to make a column of smoke in case of danger. A lookout was placed above our position to watch for the signal.

After waiting a long time, several of the small Corsican deer came running towards us. We were three, with guns, and all of us fired. The deer stopped, whirled

about, and, before we could reload, disappeared up the gentler slopes of the valley below the gorge.

At the same time came a shout of warning from the lookout above, who had seen a smoke signal. We hastened back to the *bergerie,* where the shepherds lost no time in carefully hiding their guns among the rocks.

Soon the men who had driven the game came in, followed later by the sentinels, who reported having seen two *gendarmes* moving on the road.

The next day one of my guides told me that I had not done wisely to bring ammunition among these people. Only its absence prevented fatal results in quarrels.

That night I wandered away from the *bergerie,* and scattered my powder to the winds, and buried the lead.

Thus ended my plan for hunting mouflon and deer. It had, however, been an experience. It dawned on me also that geologizing and hunting such watchful game were not entirely congruous.

My chief reason for visiting the mountains was to study the porphyries, as well as some phenomena I had seen the year before, which, after reading Agassiz's work on the Swiss glaciers, I now thought might be traces of extinct glacial activity.

It was in the valleys in the Niolo below Mount Baglia Orba, that I found what I felt sure were traces of glacial action. Here at the foot of Baglia Orba, in the Viro valley, one of the tributaries of the river Golo, the unweathered surfaces of the hard porphyries were rounded off, grooved and striated in a manner to be explained only by the action of moving ice. Below this the river had deepened its channel along the edge of a moraine which filled the valley to a height of 100 feet above the rushing waters.

We almost always slept under the stars wherever night-

fall or fatigue suggested a halt. Sometimes we claimed the hospitality of the shepherds. I remember one cold night in the hut of a *bergerie*. The smoke was suffocating, and the fleas more attentive than usual. Several times that night I went out into the frosty moonlight and stripped. Each garment was turned inside out, shaken, and thrown to a distance, till I stood naked; then I scooped the fleas off from my skin, and, jumping to where lay my clothes, dressed and returned to gather a fresh crop.

CHAPTER XII

MY "TAME" MOUFLON

SEPTEMBER was far advanced, and the nights were growing cold on the crest of the range. There came a night when I awoke to find myself being covered with snow. I had only the cloak that had served, the previous year, for clothing and for bedding. There was no shelter near at hand: so I resigned myself to the inevitable. The snow was dry; I covered my face with my broad-brimmed hat, hoping that enough snow would fall to keep me warm; it did — until a morning wind drifted it away. We made a stationary camp in a cave near a *bergerie*.

Here I made a memorable acquaintance who was destined to bring me into many embarrassing situations. One of the shepherds had a mouflon. The animal had been captured soon after birth. He had been nursed by a ewe, and had grown up among successive generations of tame sheep. He had been treated with uniform kindness, as a pet, and was thoroughly tame. But he was a ram, and was probably the oldest one in the flock. He was big. So also were his horns. To the bucking ability of the tame rams, he added the skill of countless generations of wild ancestors. He inspired respect not only in the other rams, but in the dogs and the men.

I bought him. I did this in a moment of youthful inexperience, and of enthusiastic anticipation of the admiration to be aroused on his introduction to European and American civilization.

While I camped by the *bergerie,* I cultivated in my mouflon an inspiring interest, if not affection, toward myself, by dint of much petting, but more effectively by liberal feeding. The good things in my pockets were a source of unending attraction. So, in time, I could not escape from him except by tying him up. If I hid myself, he would trace me out, apparently by scent. He came like a dog when I whistled.

I was pleased. The other students went around glorying in their dogs; I foresaw the spectacular effect of a mouflon trotting by my side.

The mouflon is one of the several varieties of wild sheep that live near the snow line on the high mountains of Asia, Africa, and America. He nearly resembles the bighorn of the Rocky Mountains. He stands between twenty-six and twenty-eight inches high, with horns curved in a rather flat spiral. The body is covered with a silky hair, which hides the wool underneath. His close relationship to the domestic sheep is shown, according to Buffon, by the fact that he can produce with it a fertile cross.

The mouflons move in troops, and live and bring forth their young on the snow, descending, during the day, below the snow line to graze. In very severe winters, when the pasturage is wholly covered they come into the villages among the sheep for food.

When taken soon after birth, they are tame, and, if uniformly well-treated, remain tolerably docile, but can be very fiercely aggressive with their heavy horns. In climbing they are more agile than goats and can jump horizontally eighteen or twenty feet.

Their cousin, the *Ovis Poli,* on the Pamirs and Himalayas, is much larger, with horns extending far outward in a pointed spiral. My son Raphael saw, on the Pamir,

one skull with horns spreading nearly five feet across from point to point.

The time had come for me to return to Freiberg. Again I was to leave behind me the care-free life of the mountain heights, the nights under the starlit heavens; the majesty of the mountains illuminated in the awful silence of the moonlit night. No more should I be startled from sleep by the echoing crash of thunder and the blaze of lightning. All these had made part of my life, adding mystery to the romance. Those months had been full of adventure, and I felt that they had been educationally profitable. I had carried through a systematic study of the varied porphyries and the dikes of a large region, and I felt a youthful pride in having discovered traces of glaciers at a point farther south than before known.

I may add that when, a year later, I showed to the eminent French geologist, Cordier, my illustrations of the correlation of the dikes, he pleased me by asking if he might publish it, if I did not intend to make use of it myself.

With some difficulty, I don't remember how, I succeeded in getting my mouflon and my rocks to the main highway, where I hired transportation to Bastia.

I went aboard the Leghorn steamer. I tied the mouflon at the side of the deck, and went below to the noon meal just as the boat started, but hearing a great noise on the deck over me, I rushed up. The mouflon had preferred his native land and started for it. He was towing at the length of his rope in the sea. The engine was stopped and with everybody's help, he was lifted aboard and tied up short. He seemed resigned, but kept inquisitive interviewers at a respectful distance.

I meant to go to Florence for a few days: so on arriv-

ing at Leghorn I asked a sailor where I could find a place to board the animal.

"My mother, *Signore,* would take good care of him," he answered.

So, getting into a carriage with the mouflon, we drove till we came to a large apartment house, where we climbed to an upper floor and I was introduced to a very respectable looking woman.

I told her my mission. She looked at the animal doubtfully; and he hopefully at her. She gave him a piece of bread from the table by her side, and he let her pet him.

"*E carino!*" (he's a dear) she said. "Yes, I will take good care of him."

"But where can you keep him, have you a yard?" I asked.

She led me into the hall and opened a door.

"Look *Signore;* here will I keep him."

I looked into a room about twelve feet square. It was a kitchen, very neat, with an Italian cooking range. A whole *batterie* of copper cooking vessels hung on the wall; and there were shelves with crockery, and, under these, numerous receptacles for foodstuffs. She was probably a caterer.

When I objected, she insisted:

"Have no fear," she said; "don't I promise you that you shall find him all right when you come? Ah! he is *so* gentle!"

So, after tying the mouflon in the kitchen, I went on my way with a light heart. Traveling had become easy.

After perhaps a week in Florence, I returned to Leghorn, and drove to get the mouflon. As I left the carriage, I saw the old woman just coming out of the house.

As soon as she saw me, she began to talk and gesticulate excitedly. Evidently something was wrong with my sheep.

I hurried up the stairs, the woman following. The kitchen door was locked; she gave me the key. There was noise within. I opened the door. The mouflon stood between the legs of an inverted table. I saw his feet come together; I dodged; he cleared the door, doubled up the woman, and bounded down the stairway.

The kitchen was a wreck. Battered coppers and broken crockery covered the floor. The food had all been looted.

He had a way of getting my knots untied, I thought it mysterious, till at sixty I discovered that I had never known how to tie a square knot.

The woman was bruised; she was also not in good humor; but she had an eye to business, and she managed the business skilfully. I got away with what I thought might take me to Venice.

I took the boat to Genoa, and drove at once to the station and bought tickets to Venice, one for myself and one for the mouflon. A train was soon to start, and I asked the guard where he would put the mouflon.

"In the dog kennel, *Signore*," he answered, pointing to a little door under the baggage-car. He called four porters and opened the door. The men lifted the struggling animal, and started to put him in head first. They twisted his head sideways to get his horns in. I protested; so did the mouflon. Then they turned him end for end, and managed to push him in till they got him as far as his horns. Then in despair they dropped him on the platform.

Then that mouflon took his innings. Quickly those four uniformed servants of the Sardinian kingdom lay

THE MOUFLON STOOD BETWEEN THE LEGS OF AN INVERTED TABLE. . . . THE KITCHEN WAS A WRECK.

doubled up on the floor. The air was blue with groans and impressive statements. The victor was proud; I was disturbed, the guard and the conductor, who came up, were haughty. That animal couldn't go on the train. He was a wild beast, and they didn't carry wild beasts.

I showed his ticket.

They answered that he could go only if inclosed in a strong cage. There was no other way, so I went to a hotel and had a carpenter brought. I told the man to measure the animal and make a strong cage for him. I waited in Genoa two or three days for the cage. When it came, I saw that it was strong. It was also very heavy. You paid for baggage by the pound.

In due time, after about twenty hours, I reached Venice in the morning, and went to a hotel. I was hungry, but after a cup of coffee and an egg, I hastened to a bank to draw money. I handed out my letter of credit, saying I wished to draw twenty pounds. The banker glanced at the letter and said:

"I'm sorry; I shall have to forward your draft to London for acceptance."

"Why must you do that?" I answered. "It isn't customary."

"We have instructions not to pay directly, except on drafts drawn on the Barings, and your letter is not from them. This applies to all others, on account of the panic in America."

The great panic of 1857! I had not heard of it; indeed, I had not come in contact with American travelers.

He said it would take about two weeks for him to get authority from London.

The banker added that, as I was going to Vienna, where the house of Baron Escales was mentioned among

correspondents on my letter, I might doubtless fare better.

After a hasty count, I thought I had perhaps enough money to take me to Vienna.

I hurried to the hotel and paid for my coffee and egg; then I bought transportation to Trieste. The passenger steamer was already gone, and I boarded an old Austrian freight steamer. The cheaper cost had attracted a rough-looking lot of passengers. I settled down for a delightful trip of a few hours.

We started with a fresh breeze. As we progressed, the wind grew rapidly stronger, and the sea rougher. Everybody and I thought of the comfort in Venice. The captain looked at the glass and ordered all to go down into the cabin. I looked down at the mass of seasick humans, and refused to follow.

The captain insisted, and when I wouldn't go down, he said I might stay on deck at my own risk, but I must sit on a bench and be lashed to the stays. By the time I was securely tied, every gangway was battened tight, and we were tossing in a frightful gale. It was the *Karst*—the nearest thing to a hurricane that ever occurs on European waters.

All that day, and all night, that blessed boat tossed in a howling wind that whistled shrill through the rigging; she plunged, rolled, and kicked. The seas dashed over the deck. Only my ropes held me. I was so drenched and bruised and seasick that I forgot to be afraid.

Towards morning the wind abated; we were in the lee of the Dalmatian coast, but we had to wait hours before it would be wise to enter the harbor of Trieste.

The captain loosened my lashings, and grinned a sardonic grin. *"Spero che a dormito béne!"* (I hope you've slept well.)

I had been for twenty-four hours storing up ideas about that boat; it was pleasant to unload them on the captain.

As soon as we landed I drove to the station. The Semmering railway had been finished through to Trieste. I had just enough money to pay to Vienna, third-class, for myself, my mouflon, and my rocks. Indeed, I had one copper coin left over. It was Neapolitan, and worthless in Austria.

The morning train had left, and there was to be no other till evening, a slow one — and that twenty-three hours to Vienna!

I was hungry. My stomach retained only memories of an economical meal at Genoa, and of a cup of good coffee and an egg at Venice; and I was thirsty; but I had no money, and I knew no one in Trieste.

So I wandered all that long day through the city, resting wherever I found public seats. Fortunately I had a half-dozen Corsican cigars; for I had learned to smoke in those nights in the marshes of the *Maremma* in southern Corsica, when collecting insects in that malarial region.

Toward train time, I paced the station platform. The mouflon smelt longingly at my empty pockets. I had one cigar left, and cutting it, I gave him the larger part; he chewed it greedily and looked in vain for more.

At last we started. The train rolled slowly on through the long night. At times it stopped for refreshments, and I walked on the platform. I looked through the door of the *buffets*. How good the great strings of *Vienna Wurst* looked, and how I envied the greedy crowd! Not being able to buy food, I didn't dare to ask for water. And I saw these things with growing longing and envy all the next day.

CHAPTER XIII

MY MOUFLON "PERFORMS" IN VIENNA

WHAT should I do when we reached Vienna, and what if I should fail to get money there? When in the evening we rolled into Vienna, I had made up my mind to act boldly. I hired two carriages, one for myself and one for my trunks, and a baggage wagon for the caged mouflon; and I drove in state to the best hotel — the *Kaiserin Elizabeth.*

A porter looked out and ran back; evidently an important guest was arriving. Quickly there formed a double row of servants across the sidewalk, and through this came the landlord. He opened the carriage door obsequiously, expecting a personage — and only I stepped out. However, he knew me and welcomed me. I had the porters take the mouflon out of the heavy cage and hold him by the rope. Then I asked the landlord where I could put the animal out to board. The mouflon came to smell my pockets, then tried at the landlord's. The latter said: "Why not here, Herr Pumpelly? We have a court."

"Oh no!" I answered, "not here; he would break everything in your house!"

The mouflon put his nose longingly against the landlord's hand; then stroking the animal's forehead the landlord said:

"He's as gentle as a pet lamb, Herr Pumpelly; we have

many children in the house, and he will be a great pleasure to them."

I insisted that he was terribly destructive.

"Let him stay here! I'll be responsible for all the damage he may do," was the answer.

I weakened, trusting to luck and to the tying rope. So the mouflon became a guest.

We entered through a hallway. At the further end a door opened into a court paved with stone. This court was perhaps thirty feet square. On the right-hand the wall had a continuous stretch of windows lighting the kitchen. On the left-hand wall a similar expanse of windows lighted the dining room. The other two walls were blank spaces.

In the middle stood an iron lamp-post; this was all there was in the court, excepting at the center of each blank wall there was a pedestal supporting a large plaster cast of a Greek deity.

A porter tied the "pet lamb" to the lamp-post, and I saw that he was properly fed.

The mouflon was hungry: for he had gone over two days on half a cigar.

I was starving; I had existed three days on the memory of an evanescent egg and a cup of coffee.

I knew the danger of over-eating under such circumstances, and sat down resolved to be prudent.

That night I had a night-mare; I was being tracked by the Austrian police for some awful crime; a loud knocking awakened me, the police were breaking in; I jumped out in the darkness and opened the door and was instantly knocked sprawling on the floor.

The police were my mouflon. The servants had been cleaning, and had left open the door into the court. The

mouflon had become untied, and traced me to my room and had butted against the door.

When running loose at the *bergerie* in Corsica, he had been able to find me when I was not where he could see me. I don't remember having taken him to my room that evening; he must have traced me here as he did in the mountains.

I made him lie down; then I went to bed and slept sweetly. I was awakened by a noise.

My bed was at one end of a long room, and I faced a window at the other end. It was daylight. The mouflon had just jumped onto a bureau at the foot of my bed, and stood out in full view between me and the window. He had never seemed so beautiful; I noted the proud poise of his head and the powerful horns. I was happy.

Suddenly I saw him glance across the room; then, bringing his feet into position he sprang. He had seen another mouflon challenging him, and he landed in the looking-glass. I looked out of the window and saw that the sun was only just rising; the way would be clear for me to get the animal back to the court. So I pulled on my trousers; my shoes were gone to be polished. I tied a string around his horns and started out barefooted.

The stairway was a square well; you descended to a landing half-way between floors; then turned and continued down from this landing in the opposite direction, to the next floor. There was a low dado wainscot rising from the stairs; above this the wall was covered with narrow mirrors joined together to give a continuous surface of glass. As you went down, you saw yourself in another great mirror that covered the wall of the landing. I had gone half-way down the first stairs when the cord was jerked from my hand,—the mouflon had seen an-

other ram, and had demolished him with a loud crash of shattered glass. A sharp piece had pierced his back and had drawn blood.

He was frightened by the vanishing of these ghost-like mouflons. He was also pained.

In his terror he sought safety.

Before him the great mirror of the wall of the landing seemed to offer safety on the reflected stairs, and with a mighty spring he sailed over my head.

He landed half-way in the mirror and with another great crash, mouflon and glass fell to the floor.

Then he flew below.

I was dazed.

The noise of opening doors sounded along the corridors. The guests in nightgowns rushed to the stairs and peered down from above and up from below.

They saw a disheveled boy with bare feet standing between two piles of glass; and they saw blood on the steps.

They expressed freely their opinion of me and of the happenings, in many languages. One man said I was a "spleeny Englishman on a spree."

This seemed to explain, and they went off.

I remembered my empty purse and the uncertainty of landlords' promises. I also felt pained by some personal remarks made by the guests.

I sneaked down to the hall and found that mouflon, and I tied him tight, as I thought, though I have already confessed that I never learned how to tie a hard knot till forty years later.

Then I got back to my room, dressed, and quietly left the hotel and walked the streets till the bank should open.

When I offered my letter of credit, the cashier looked

at it; then he said: "I am sorry, but since your respected letter is not drawn on the Barings, we shall have to forward your draft to London for acceptance before paying."

"How long will it be before I can touch the money" I asked.

"About two weeks," he answered.

"Can't you get authority by telegraph to pay?" I asked.

"We never pay on telegraphic advices," he answered.

I went out to meditate. I had left the hotel without breakfasting, and longed for my usual coffee and an egg. Thinking of eggs recalled a bet I had won against von Andrian and Cotta, at Freiberg, that I couldn't swallow two eggs on an empty stomach; and thinking of von Andrian reminded me that he might be in Vienna, because he had entered the Austrian Geological Survey.

I found his address in a directory, and went to the place, which was a large apartment house. The porter directed me to an upper floor. When I reached the proper landing, I heard strains from a violoncello. I knew that von Andrian played: so I triangulated the hallway till I located the proper door and knocked.

I was right; von Andrian opened the door and was glad to see me.

"How long shall you be in Vienna?" he asked.

"Till I can get enough money on my letter of credit from London," I said.

Then I told him of my experience at the bank, how only letters on the Barings were honored.

After thinking a minute he said:

"There are many American students here who must be in the same condition. Your Minister should be able to give you advice; why not go and see him?"

This hadn't occurred to me: so I got up to go to our legation.

"That's right," he said, "but promise me that you'll come right back and tell me the result."

I promised and went away. The Minister's name was Jackson, and he hailed from Georgia. I said to him:

"Mr. Jackson, I am an American student stranded in Vienna with a letter of credit. The bank will not pay my draft till they have notice of its acceptance in London, because it is not drawn on the Barings. This will take at least two weeks, and I need the money now. I don't understand these things, but think there are many Americans here in the same fix: so I have taken the liberty of coming to you for advice." Then I handed to him my letter of credit and my passport.

He looked silently through the letter and at all the notings of drafts that had been paid on it. Then he opened the passport. I had traveled much during four years; the pages were thickly covered with *visés,* and, for added space, the police had tied and sealed the document into a booklet of many pages which were nearly filled with more *visés.*

The Minister looked the book slowly through to the end. He had till now not spoken a word.

"Mr. Pumpelly, why don't you ask the banker to get instructions by telegraph?"

"I have asked them, Mr. Jackson, they don't pay on telegraphic advices."

He relapsed into another silent reading through of my letter and of the passport.

Then that man folded my papers and gave them back to me. He took out his watch and said:

"Mr. Pumpelly, I have an important engagement."

Then he stood up. It was a dismissal.

I felt that he had taken me for a beggar. I thanked him for his marked kindness and for the excellence of his advice.

When I reached von Andrian's room I noticed a pile of things on his table that had not been there before. And when I told of my reception by our Minister, he made some remarks about his American Excellency; then he said:

"I've had a pawnbroker up here, and find that pledging all my belongings won't bring enough to help you out. What have you got to add, to make up? Have you a watch?"

"No, mine is there already. I've only five boxes of rocks and a mouflon. A mouflon, *lieber* Andrian, is a gentle wild beast who amuses himself by hunting for his kind in looking-glasses, and demolishing them. The looking-glasses belong to my landlord."

Then I told the mouflon story up to date.

"You'll have a bigger bill than we can settle," he said, "you must sell the mouflon if you can't wait for money from London."

"Only too willingly," I answered; "but who'll buy him?"

"I've never heard of a mouflon," Andrian said, "so he must be a rare animal; why not try the Zoölogical Garden? Write Herr von B——, whose charge is the *Thier Garten,* for an appointment, and when you see him, ask a big price."

Andrian dictated the letter and sent his man with it to the palace. The messenger returned with a note containing an appointment for eleven o'clock on the next morning.

Now that the mouflon was as good as sold, I began to have regrets as I walked to the hotel. To sell him was

to acknowledge failure; failure on my part, not on his part: for as a mouflon, he was a brilliant success. While thinking these thoughts, I entered the crowded dining room. The only vacant seat faced the court, and looking out I could see my pet sleeping calmly at the foot of the lamp-post. As I looked on those victorious horns and recalled their exploits, I felt proud of their owner, and sad regret at the thought of the parting.

Fearing that he might wake up and see me, and come to me, I moved a vase of flowers to hide me, and began to eat. Suddenly I heard a child call out:

"Mama, mama, look! that wild animal is loose!"

There stood the mouflon looking for a place to jump to. He jumped.

He landed on the high pedestal of the Apollo Belvedere. The impact sent the pedestal against the wall, and Apollo onto the pavement, but not before the mouflon had gathered force for another spring. He sailed through the air and through the kitchen window, where he overturned a table covered with crockery.

The frightened cooks and waiters rushed out into the court.

The guests, startled by the child's cry of "wild animal" and by the crashes of statue and glass, rushed to the window. I was the only one that remained seated.

During the excitement the landlord entered the room. Raising his hands to calm the guests, he came towards me saying:

"Ladies and gentlemen, pray do not be excited, it is only this gentleman's pet lamb!"

He had come to ask me to get the animal out of the kitchen, so that the servants would go in.

I went through the long room feeling the stare of all those people, and knowing that some of them had said

uncomplimentary things about me when I stood barefooted among the ruins on the stairs.

I found the mouflon on a table, with his nose buried in a dish of Brussels sprouts, and covered with the white sauce. I got him out and tied him to the lamp-post.

I wasn't anxious to meet the landlord: so I slunk quietly out of the hotel, and wandered till night. Then I slipped in and went to bed to kill time, and to drown my feelings in sleep.

I breakfasted in my room, and went out to walk the streets.

At eleven o'clock I was received by Herr von B——. He was a short man with ribbons of several decorations on his breast. He was very courteous, and asked me to what he owed the pleasure of my visit.

I told him that I had brought a mouflon from the mountains of Corsica, intending to take him with me to America, but that I found him to be an embarrassing traveling companion, and would like to sell him.

"A mouflon!" he said. "Oh, the mouflon is a rare animal; please describe yours."

Then I spoke elaborately of the size and horns of that mouflon, of his general beauty, and of his moral character.

The director listened with a face beaming with appreciation.

"Splendid!" he exclaimed; "yes, mouflons are rare, very rare, and yours would be a prize for a *Thier Garten;* how much do you ask for him, Herr Pumpelly?"

"He has cost me about five hundred guldens," I answered; "I would like to get back what he has cost me."

"Only five hundred guldens; why that should be a mere bagatelle for such a fine specimen; we will be

glad ——" then suddenly grasping his head with his hand he exclaimed:

"Ach! how could I have forgotten; pray pardon me, Herr Pumpelly; during this interesting conversation I had forgotten to say that several years ago His Majesty received a present of a pair of mouflons from the King of Sardinia. They have produced a herd, and the Emperor sometimes shoots one of them. I'm so sorry that I had forgotten."

My hopes were dashed. I stood there feeling that I had come to market with one unsalable sheep. I didn't like that seeming, so I said that I wanted the mouflon to have a good home, and begged that the *Thier Garten* might take him as a gift.

"Ach! that is too kind!" the director said; "but if you insist, we shall be delighted. I can assure you that you will receive an acknowledgment from His Majesty before you leave Vienna; by the way when do you leave?"

"To-morrow," I answered.

I wrote out and gave him an order on the hotel for the mouflon. Herr von B —— took it and said, in opening the door:

"You will surely receive an acknowledgment from His Majesty this evening or early to-morrow."

I wandered wearily to von Andrian. He was not consoling. He said I should have kept the animal: for I would now have to let my draft go to London, and wait for the money. I regretted having needlessly given away my mouflon.

After several hours I left von Andrian, and walked slowly to the hotel, dreading to enter.

As I came near, I met a wagon carrying off the mouflon: the director had lost no time. I looked long-

ingly after my departing companion; all his exploits were forgiven, in my sorrow at his loss. Then with uncertain steps, I entered the hotel.

A porter hurried to meet me, holding out a telegram.

In the evening when I had arrived in Vienna, that is as soon as I could let some one else pay for telegraphing, I had wired to my fellow student Niccoli, in Freiberg, who was under some obligation to me for help in a delicate matter, to send me a certain sum of money. I had not really expected that he could raise the amount.

The telegram was short but it raised my spirits:

"All will be done.
Niccoli."

The letter came the next morning; and it brought more than the amount I had asked for. It contained also the names of all the contributors to this charity, with the amounts opposite each name. Nearly every foreigner had put in all he had on hand, whether little or much.

I foresaw that there would not be enough money to cover all the cost of my mouflon's amusements, but I hoped the landlord would let me send the excess from Freiberg. How little I knew that man!

That evening von Andrian and I celebrated the relief. There was lacking only the promised acknowledgment from His Majesty. I was to leave Vienna by the night train.

After the supper, I went to pay my bill, or at least a part of it. The bookkeeper made out the account, carefully entering the usual innumerable list of extras, and not forgetting all the candles I had looked at. I examined it, and asked him if he had not heard of my mouflon's damages. He turned to the landlord——

My host drew a long sigh:

"*Ja ja,* Herr Pumpelly, there were many damages, but you know that I promised to be responsible."

And he persisted in refusing payment.

In less than two days, that blessed animal had demolished not less than sixty square feet of mirror, to say nothing of three ghost mouflons. And that phenomenal landlord stuck to his promise.

When I reached Freiberg, my friends were waiting for the *diligence,* and took me to a celebration supper. After this they made me tell how it was that I had got stranded. So I told them about the trouble with my letter of credit.

And then I told them the mouflon story to date. I say to date, because there are some sequels in the future. If I had not told it then, it would have been forgotten, like many other adventures of my life.

My friends seemed to enjoy the story; they made a few sarcastic remarks, and in atonement elected me president of the club.

CHAPTER XIV

IN SEARCH OF ADVENTURE

THE following summer was to be the last vacation I should have before leaving Freiberg and entering upon the serious duties of life. There was an English student — Parkyn — who was in the same condition.

We decided that we would use that vacation in the manner that would give us much adventure combined with some profit in the way of seeing mines. Before going out into the cold world, we must have such a fill of rousing experiences as would forever remain warm in our memories.

Parkyn knew what real adventure was: for he was older than I, and he had spent two years in the wild life of the first rush to the gold fields of Australia. One of his stories recurs to me.

Parkyn stayed one night at a wayside house in the "bush." He was eating when a man entered and handed to the cook something wrapped in paper, telling him to cook it. Then he sat down opposite Parkyn. When the man had emptied the dish, he leaned back and said:

"There! I told the damned —— I'd eat his damned liver, and I've done it!"

It was clear that no tame adventure would satisfy Parkyn's longing.

So all through that winter we discussed the possibilities of all the countries of Europe. Parkyn thought them too simple. But before the end of the *semester,* there came

the news that Prince Danielo of Montenegro was going to fight the Turks.

This seemed promising. We decided that we would go to Montenegro. We would offer our services to that Prince, in the noble effort to destroy the infidel invader! It seemed quite natural that we should be accepted, and very certain that there would be adventure galore.

Incidentally, we would examine some mines on the way through Hungary. And we started on this enterprise. We went first to Wielicka in Austrian Poland.

Here we descended by a stairway cut in the rock a thousand feet into the earth. We wandered through great rooms cut in the solid rock salt, their lofty roofs supported by columns of the almost transparent salt. We crossed subterranean lakes in boats. There was an enormous salon with a table cut out of the rock (salt) running the whole length of the room. Chandeliers hung from the roof, with pendants of salt crystals instead of glass, and the walls were, I think, decorated with sculptures in the same glistening material. In this room, I was told, there had been a royal banquet. There was also a chapel with altar and saints all cut out of the rock salt.

To take us to the surface, there was a great rope with many loops at the end. We and the other visitors each occupied a loop, and in the shape of a great cluster of grapes we were lifted to daylight up through a large shaft in the white rock salt.

After having soothed our consciences by noting the method of mining, we bought a pair of Magyar ponies and a light wagon, for the journey to Buda-Pesth.

I remember few details of this stage of our journey of nearly 200 miles by road. It is a memory of delightful summer travel in ideal weather, through Galicia and over

the Carpathian Alps, and all the way over the plains of Hungary to the Danube.

I recall the approach to one Galician village, and a vision of many Jews loitering about, all clad in long, black gaberdines, with tall silk hats. They had long, greasy curls and beards. It seems strange that from this clothing are descended our silk hat and frock coat.

We stopped at noon to eat at a house in the village. Evidently the only clean food would be boiled eggs. When we asked for spoons, the woman thought for a minute, then opening a drawer in our table, and raking over a mass of dusty rubbish, brought forth one spoon green with verdigris, which she offered without further ceremony. Fortunately the eggs were hard enough to eat without spoons. While the hostess was out hunting for change, we opened a door and found ourselves in a synagogue. My cane stuck deep in the dirt on the floor.

All that afternoon we passed groups of Galician peasants, men and women in bright gala costumes.

We were told that the Jews owned the distilleries, and absorbed the means of the peasantry. It is the old story of contact between races.

We geologized on the Carpathians, and climbed the peaks of the Tatra Mountains, and we enjoyed for several days such luxuries as were offered at a favorite watering place in the mountains.

Then, as a sop to that Cerberus, conscience, we made a careful study of the gold mines and methods at Kremnitz.

We made a side excursion to find von Andrian, who was working on the Geological Survey. He drove with us part of the journey, starting at three in the morning. Looking at the brilliant starlit sky, I saw a faint star that seemed blurred in contrast with its neighbors. After

much discussion we agreed that it must be a comet. It was the great comet of 1858. During the rest of the journey, we saw it growing to the distinct comet form. And through that summer I saw it stretch out its tail till it swept, in a brilliant curve of light, half across the heavenly arch. I think our first sight of it was before it was noted in the newspapers.

At Buda-Pesth we sold our outfit, and boarded a steamboat to go down the Danube.

I don't remember whether we were one or several nights on that boat, but we came at last to the mouth of the Save River, in whose valley lay the route to Montenegro. Here we left the boat and started southward. It may have been near the landing or further up the valley, that an officer of the Austrian Frontier Guard demanded our passports. We had forgotten to have them *viséd* for Montenegro, and were turned back. We tried to get through at another point. Alas! we were arrested as Russian spies! We were brought before an officer. He compared our identifications on the documents, and looked serious.

"You have done a dangerous thing in trying to cross this frontier without permission; what was your reason?"

"We are two students on a vacation trip, and we thought to have some fun in fighting the Turks," we answered.

The officer clearly saw some humor in the idea. He laughed good naturedly.

"That would be fine," he said, "but I'm sorry that it's impossible." Then he added:

"I might arrest you, for we are neutrals; but I'll accept your word of honor that you won't try again, and will let you go elsewhere in Austria-Hungary."

We promised.

A considerate providence, or perhaps the shades of our ancestors, had made us forget the *visés*, and had dashed our hair-brained plan.

We couldn't kill Turks; we decided to go to Belgrade, which was then Turkish territory, and see what kind of people the Turks were anyway. So we took the next boat, and steamed down the beautiful Danube. We got *visés* for Belgrade, and crossed the frontier.

In the quaint city, that had seen the carnage of invading hosts through the centuries, we found a son of one of our instructors at Freiberg. He went around with us and introduced us to the governing Pasha.

The Pasha was a genial old gentleman; he received us very kindly and made us sit on divans. Coffee and delicious confections were placed before us by slaves; and we smoked *Latakia* in *Narghiles* with long, flexible tubes. We liked these so much that he presented them to us, and I still have mine. He spoke French much better than we could, and we talked long about Paris and Turkey.

The Pasha treated us so well that we felt quite resigned to our disappointment, and were inclined rather to like the Turk we knew better than the Montenegrin we had not seen.

CHAPTER XV

SEQUEL TO THE MOUFLON STORY AND RETURN TO AMERICA

As we had to find new fields to roam in, I said to Parkyn: "Let's try Transylvania. No one goes there; it's a quaint region, with lots of interesting gold mines and picturesque scenery."

"Oh, hang Transylvania!" he answered; "I'm tired of these Danubian countries; let's go to Vienna."

"If you don't care for Transylvania," I said, "we might branch off south, and tramp through Croatia and Dalmatia to the Adriatic. It's a wild region where the rivers are lost in underground caverns, and the people haven't got out of the fifth century."

Parkyn used some improper words, and persisted in going to Vienna.

"Tell me why on earth you want to go there now," I answered, "we've both been there, and it's a hot and dreary place in summer."

"Well, if you must know, I'll tell you; I didn't want to tell. Now don't misunderstand; it wasn't that the boys didn't believe all your tale about the things your mouflon did; no, it wasn't that; the truth is, they made me promise that, if I ever got out of Montenegro alive, I would go to Vienna, and I should see whether there was any such animal as a mouflon anyway!"

I had to agree. So to Vienna we went. We drove out to Schönbrunn. An old keeper said:

"Certainly, many people come to see our mouflons;

they are the only ones in any *Thier Garten* in Europe."

He led us to an inclosure in which were two mouflons — my superb animal and a smaller and lean one.

"Where are the others?" I asked.

"There are no others," he answered.

"You're mistaken," I said. "There's a herd of them; His Majesty comes here to shoot them."

The old man threw up his hands:

"Are you crazy, my dear Sir? I have told you that these are the only mouflons in confinement in Europe. That little one was presented to His Majesty by the King of Sardinia three years ago. His Majesty bought this fine one last winter from Herr von B——. He paid him 1,500 guldens."

Seeing that my companion was about to speak, I said to him:

"Keep quiet, don't say a word. Let's get right out of Vienna." I knew something of the Austrian secret police, and Herr von B—— was an official of importance.

Ten years later, when I was on Lake Superior, selecting the land grant of the Portage Lake and Lake Superior Ship Canal, I received a letter from a friend in New York, who wrote that he had given to two gentlemen a letter recommending them to me. They were traveling incognito. One was Duke Wilhelm of Würtemberg, uncle of the Emperor of Austria, and Field Marshal in the Austrian army. The other was Prince Eugen, his nephew, and heir to the throne of Würtemberg. The duke had expressed a wish to visit the great primeval forests of the Northwest, and the iron mines. He was interested in geology, and the royal family had large interests in iron mines and forests, and in the industries connected with both. My friend hoped I would be able to aid these gentlemen in their visit.

A week or two later, in Marquette, two cards were handed me,

"W. T. Würtemberg."
"Eugen Würtemberg."

The duke was a tall man of soldierly bearing, and still feeling wounds received in the war in Italy. The prince was young, and with the manner of a young German officer. I noticed that in leaving a room, the uncle always held the door open for the nephew to pass first. Both of them had the affable simplicity of manner of royal personages.

I took them with me for a week or more on a trip, in canoes and on foot, through the great untouched forest. They adapted themselves at once to the very rough conditions and food. The older man showed intelligent interest in all he saw, the younger one shot game.

We passed long evenings telling stories by the great campfires. One night, when I thought I knew the duke well enough, I told the mouflon story. He was listening with interest. When I came to the scene where I stood on the stairs between two shattered mirrors, he started forward throwing out his hands.

"I was there! I saw you! I had my apartments in the *Kaiserin Elizabeth.*"

When in finishing I came to what had been my real reason for telling the story — the statement by the keeper that Herr von B—— had sold the mouflon — the duke said:

"Yes, those fellows are shameless, they do such things. But, Herr Professor, I shall tell the Emperor; you shall have your revenge."

The duke died soon after returning to Vienna, and I fear that I may have missed the revenge.

In my student days and in the following years, I was often asked to tell this story. It got ahead of me in my travels, and I have told it in English, German, French, Italian, and Japanese.

At Freiberg I set about arranging and studying my Corsican collection of rocks.

At the same time I worked out my scheme of the relative ages of the dikes I had studied in Corsica, to each other and to the rocks they traversed.

Then I wrote an account of the occurrences of traces of ancient glaciers in Corsica. The relation of glaciers to geological history had only recently begun to be discussed and I searched such scientific literature as was at hand for possible clues.

I received my certificate from the authorities of the Academy, made a tour of farewell visits, and, with many "*Glück auf!*" (Good luck!) blessings, started forth into the world. I was harassed by the feeling that I was ending my education with a very widely neglected gap in the way of broader culture. I felt that I should like to spend years at a university, studying history and archæology. The geological history of the globe and of its lower forms of life, which had been my chief interest, seemed to be only stepping-stones to the history of man.

But my parents had spent so much for my six years in Europe that it was a duty to shift for myself.

After a round of visits to the coal mines of Westphalia, and a visit to some mines near Aix-la-Chapelle, I came to Paris. Here I stayed for some time working in the collections at the *École des Mines* (School of Mines) and at the *Jardin des Plantes,* and in collecting fossils in the Paris basin, this time with a much better knowledge than in my earlier excursions.

I lived again at the pension at 25 Rue Royale, where

I found again my friend Baroness de Pailhez and several other agreeable ladies.

It must have been autumn when I left Europe to return to America. In coming, I had crossed the Atlantic on a sailing vessel to Hamburg in fifteen and a half days, the trip back from France in a steamer was, I think, about as long. The steamer was the *Ocean Queen,* a large side-wheeler. The passage was very rough. We had a startling experience; during the night I was awakened by a hard bump on the bottom of my berth which was the upper one. In the lower one slept Susini, the opera singer. He was a large and powerful man; it was Susini's head that bumped. There was loud shrieking in the adjoining saloon. We jumped out, and into water up to our knees. Opening the door we saw a wild and weird sight. The long saloon occupying the rear half of the ship had already a foot or more of water. The ship was pitching. The passengers, chiefly women in night clothes, were hanging to the revolving chairs, along the double row of tables. Their floating bodies swung round in unison to point toward bow or stern as the water surged back and forth.

I could see that the water had come in through the port-holes at the stern; and I remember that before going to bed I had opened these for air. With much difficulty I managed to close them.

The explanation given by the ship's officers, and which I never understood, was that we were driving before a severe storm on a heavy sea, and that the waves traveling faster than we did, had at one moment reversed our engine and submerged the stern. I don't know yet that this is possible; but I did know, silently, that all those ladies owed their salt bath to me. One wheelhouse with

a man was carried away, for which I was not responsible, nor was I for the big lump on Susini's head.

I remember one other passenger on this voyage — Mr. Yancey — who was prominent later in the Southern Confederacy. We were much together. Once, when he showed interest in my plans for the future, I happened to express doubt as to an opening for professional work in mining; and whether I should gain a living. He threw his arm over my shoulder and said: "Don't worry; you'll find that money comes fast enough; the trouble is in keeping it."

This was very consoling, for I didn't as yet know how true was the qualifying phrase.

CHAPTER XVI

I GO TO ARIZONA

WHILE visiting relatives in Albany the winter following my return from Europe, I came to know Professor Hall, the great paleontologist, and Colonel Jewett, the Curator of the Geological Museum — an acquaintance that lasted, with both, through their lives. In the case of Colonel Jewett, this meeting was one of the critical incidents that determined my subsequent career. Mr. Wrightson, of Cincinnati, had asked Colonel Jewett to recommend a geologist to develop some mines in Arizona. This led to my appointment after some correspondence and a visit to Cincinnati.

It led also to a wild life of adventure, and to a pretty thorough education in human nature gained from contact with men of varied races and of every shade of character from the stalwart pioneer of the frontier to the gambler, the bully, and the frank cut-throat. In a general way, Mr. Wrightson warned me of the nature of the environment into which my acceptance of the post would lead me, but his description was, compared with the reality known later, like the faded print of a poor photograph. However, the prospect only strengthened my wish to go.

In the affectionate parting from my parents, my dear mother said:

"My dear boy, remember always to do your whole duty towards your employers."

In St. Louis on the 8th of October, 1860, I bought my

ticket "from Syracuse to Tucson, per Overland Mail Stage, Waybill No. 7 of this date." I went by rail to Jefferson City, then the westernmost end of the railroad in Missouri. This finished the first, and in point of time the shortest stage in a journey, the end of which I had not even tried to foresee.

I secured the right to a back seat in the overland coach as far as Tucson, and looked forward, with comparatively little dread, to sixteen days and nights of continuous travel. But the arrival of a woman and her brother dashed my hopes of an easy journey at the very outset, and obliged me to take the front seat, where, with my back to the horses, I began to foresee coming discomfort. The coach was fitted with three seats, and these were occupied by nine passengers. As the occupants of the front and middle seats faced each other, it was necessary for these six people to interlock their knees; and there being room inside for only ten of the twelve legs, each side of the coach was graced by a foot, now dangling near the wheel, now trying in vain to find a place of support. An unusually heavy mail in the boot, by weighing down the rear, kept those of us who were on the front seat constantly bent forward, thus, by taking away all support from our backs, rendering rest at all times out of the question.

My immediate neighbors were a tall Missourian, with his wife and two young daughters; and from this family arose a large part of the discomfort of the journey. The man was a border bully, armed with revolver, knife, and rifle; the woman, a very hag, ever following the disgusting habit of dipping — filling the air, and covering her clothes with snuff; the girls, for several days overcome by seasickness, and in this having no regard for the clothes of their neighbors; — these were circumstances which of-

fered slight promise of pleasure on a journey which, at the best, could only be tedious and difficult.

For several days our road lay through the more barren and uninteresting parts of Missouri and Arkansas; but when we entered the Indian Territory, and the fertile valley of the Red River, the scenery changed, and we seemed to have come into one of the Edens of the earth.

Before reaching Fort Smith every male passenger in the stage had lost his hat, and most of the time allowed for breakfast at that town was used in getting new head-gear. It turned out to be a useless expense, however, for in less than two days we were all again bareheaded. As this happened to the passengers of every stage, we estimated that not less than fifteen hundred hats were lost yearly by travelers for the benefit of the population along the road.

After passing the Arkansas River, and traveling two or three days through the cultivated region of north-eastern Texas, we came gradually to the outposts of population. The rivers became fewer, and deeper below the surface; the rolling prairie-land covered with grass gave way to dry gravelly plains, on which the increasing preponderance of cacti, and the yucca, warned us of our approach to The Great American Desert. Soon after our entrance into this region we were one morning all startled from a deep sleep by the noise of a party coming up at full gallop, and ordering the driver to halt. They were a rough-looking set of men, and we took them for robbers until their leader told us that they were "regulators," and were in search of a man who had committed a murder the previous day at a town we had passed through.

"He's a tall fellow, with blue eyes and red beard," said the leader. "So if you've got him in there, driver, you needn't tote him any further." As I was tall, and had

blue eyes and a red beard, I didn't feel perfectly easy until the party left us, convinced that the object of their search was not in the stage.

One can scarcely picture a more desolate and barren region than the southern part of the Llano Estacado between the Brazos and the Pecos rivers. Lying about 4,500 feet above the sea, it is a desert incapable of supporting other plant or animal life than scattered cacti, rattlesnakes, and lizards. Our route, winding along the southern border of this region, kept on the outskirts of the Comanche country.

Here we were constantly exposed to the raids of this fierce tribe, which had steadily refused to be tamed by the usual process of treaties and presents. They were committing serious depredations along the route, and had murdered the keepers at several stations. We consequently approached the stockade station-houses with more or less anxiety, not knowing whether we should find either keepers or horses. Over this part of the road no lights were used at night, and we were thus exposed to the additional danger of having our necks broken by being upset.

The fatigue of uninterrupted traveling by day and night in a crowded coach, and in the most uncomfortable positions, was beginning to tell seriously upon all the passengers, and was producing in me a condition bordering on insanity. This was increased by the constant anxiety caused by the danger from Comanches. Every jolt of the stage, indeed any occurrence which started a passenger out of the state of drowsiness was instantly magnified into an attack, and the nearest fellow passenger was as likely to be taken for an Indian as for a friend. In some persons, this temporary mania developed itself to such a degree that their own safety and that of their

fellow travelers made it necessary to leave them at the nearest station, where sleep usually restored them before the arrival of the next stage, in the following week. Instances had occurred of travelers in this condition jumping from the coach, and wandering off to a death from starvation in the desert.

Over the hard surface of the country beyond the Pecos River, which is everywhere a natural road, we frequently traveled at great speed, with only half-broken teams. At several stations, four wild horses were hitched blindfolded into their places. When everything was ready, the blinds were removed at a signal from the driver, and the animals started off at a runaway speed, which they kept up without slackening, until the next station, generally twelve miles distant. In these cases the driver had no further control over his animals than the ability to guide them; to stop, or even check them, was wholly beyond his power; the frightened horses fairly flew over the ground, never stopping till they drew up exhausted at the next station. Nothing but the most perfect presence of mind on the part of the driver could prevent accidents. Even this was not always enough, as was proved by a stage which we met, in which every passenger had either a bandaged head or an arm in a sling.

At El Paso we had hoped to find a larger stage. Being disappointed in this, I took a place outside, wedged between the driver and conductor. The impossibility of sleeping had made me half-delirious, and we had gone but a few miles before I nearly unseated the driver by starting suddenly out of a dream.

I was told that the safety of all the passengers demanded that I should keep awake; and as the only means of effecting this, my neighbors beat a constant tattoo with their elbows upon my ribs. During the journey from the

Rio Grande to Tucson my delirium increased, and the only thing I have ever remembered of that part of the route was the sight of a large number of Indian campfires at Apache Pass. My first recollection after this, is of being awakened by the report of a pistol, and of starting up to find myself in a room, where a number of people were gambling. I had reached Tucson, and had thrown myself on the floor of the first room I could enter. A sound sleep of twelve hours had fully restored me, in both mind and body.

I got up. No one noticed me. I looked on a novel scene. There were two or three men neatly dressed, and with delicate hands, who were dealing out cards. Their bearing was quiet and easy. The rest were a rough-looking lot of white men with unclean beards, two of them in a quarrel that might bring more shooting.

I walked out into the brilliant sunlight. Houses built of sun-dried mud bordered a vista that opened upon a vast, yellow-brown, desert plain; and, beyond, a mighty barren range of wonderfully sculptured mountains rose with a lofty majesty that cast its glamour over the whole scene.

I had no remembrance of having eaten for a week. So when I saw some men hurrying to a house where a man with a revolver stood ringing a bell, I turned to enter. The man stopped me.

"Fifty cents first!" he said, holding out a hand. There were jerked beef, and beans, and some things they called bread and coffee. You ate what was pushed to you; the memory of that pistol acted as a persuasion.

The curtain had risen on a new act in the drama of my life; Arizona was before me with its wide range of types of man and Nature.

My first thought was to make the necessary prepara-

tions for the journey to Tubac and the Santa Rita mine. Having soon succeeded in securing a place in a wagon which was to start in a day or two, I gave up the interval to seeing the little of interest in the town and neighborhood.

The most interesting objects of curiosity in the town were the two great masses of meteoric iron which have been mentioned by the various travelers who have passed through this region. These had long lain in a blacksmith shop, serving as anvils, and nothing but the impossibility of cutting them had saved them from being manufactured into spurs, knives, etc. The largest mass, half-buried in the ground, had the appearance of resting on two legs; but, when removed, in 1860, it was found to be a ring of iron, varying from thirty-eight to forty-nine inches in its external diameter, and from twenty-three to twenty-six and one-half inches in its internal one, and weighing about 1,600 pounds. It lies now in the Smithsonian Institution at Washington.

Leaving Tucson early in the morning, we ascended the valley of the Santa Cruz by a sandy road. At first we passed a few patches of land cultivated by irrigation, but soon these were succeeded by the broad sandy plains characteristic of the region and relieved from absolute barrenness only by a great number of acacia trees, and a still greater abundance of cacti, of many and large varieties.

We camped late at night about fifteen miles north of Tubac.

Early the next morning we were startled from sleep by the approach of a wagon, which turned out to contain the superintendent of the Santa Rita mines, Mr. H. C. Grosvenor, and a friend, who had come out to meet me,

As we continued our journey southward, the character of the country gradually changed.

For a short distance the bed of the Santa Cruz was filled with running water, and its banks supported a grove of large cottonwood trees, giving a welcome shade from the hot sun, while a heavy growth of grass covered the flat.

On our left rose the high, double-peaked Santa Rita, the highest of the mountains of Arizona south of the Gila River. A bold, precipitous spur, the Picacho del Diabolo, juts out into the valley, a promontory of naked rock, and a favorite post from which the Apache watched for the opportunity to make a raid.

Crossing the Santa Cruz, we passed the *Canoa,* a stockade house used as an inn, a place destined to see a massacre in the following year. A further ride of fourteen miles brought us to the old Spanish military post of Tubac. The restored ruins of the old village were occupied by a small mixed population of Americans and Mexicans, while, near by, a hundred or more Papago Indians had raised a temporary camp of well-built reed lodges.

After breakfasting we left Tubac, and traveling eastward about ten miles, now ascending the dry bed of a stream, now crossing the gravelly *mesa,* we reached the *hacienda* of the Santa Rita mines, my destination.

At the time of my visit Arizona comprised simply the tract of country known as the Gadsden Purchase, having been bought of the Mexican Government, through our Minister, Mr. Gadsden, for $10,000,000, to serve as a southern route for a railroad to the Pacific.

CHAPTER XVII

LIFE AT THE SANTA RITA MINES

THE *hacienda* of the Santa Rita mines, which was to be my home, lay in a broad and picturesque valley, shut in on the north by the lofty range of the Santa Rita Mountains, and on the south by high and castellated cliffs of dark porphyries and white tufa. Through the open valley, toward the west, the high hornlike peak of the Baboquiveri Mountain, its outline sharply cut on the clear sky, closed a vista over fifty miles of intervening country. The Santa Rita valley consists mainly of mesa-land, its outline broken by jagged rocks rising like islands from the plain, or by the round-backed spurs from the mountains. The surface of these spur hills is roughened by a network of many mineral veins.

The whole valley and its inclosing hills were covered with abundant grass of several kinds, which, while of great importance to the country, gave it a parched appearance. The peculiar effect of this vegetation was heightened by the abundance of the short columnar fish-hook cactus, the broad thorn-pointed leaves of the Spanish bayonet, and the tall lancelike stem of the century plant, bearing, in season, its gracefully pendent flowers.

The scenery of Arizona, dependent in great part on its climate and vegetation, is unique, and might belong to another planet. No other part of the world is so strongly impressed on my memory as is this region, and especially this valley. Seen through its wonderfully clear atmosphere, with a bright sun and an azure sky, or with every

detail brought out by the intense light of the moon, this valley has seemed a paradise; and again, under circumstances of intense anxiety, it has been a very prison of hell.

A few days after my arrival at the mines, in company with Mr. Grosvenor, I started on a journey to Fort Buchanan, twenty-two miles distant. Our route lay in part through a rocky and gloomy defile, along one of the war trails of the Apaches leading into Sonora. From the countless tracks in the sand it was evident that a successful party of raiding savages had returned with a large drove of horses and mules.

A few miles short of the fort we stopped at the house of an Arkansas family, one of the daughters of which had escaped most remarkably a few months before from Indian captivity and death. She had been married the previous year, and had accompanied her husband to the Santa Rita Mountains, where, with a party of men, he was cutting timber. While alone in the house one day she was surprised and taken off by a small band of Apaches, who forced her to keep up with them in their rapid journey over the mountain ridges, pricking her with lances to prevent her falling behind. The poor woman bore up under this for about ten miles, and then gave out altogether, when the savages, finding they must leave her, lanced her through and through the body, and, throwing her over a ledge of rocks into a snow-bank, left her for dead. She was soon conscious of her condition, and, stopping the wounds with rags from her dress, began her journey homeward. Creeping over the rough country, and living on roots and berries, she reached her home after several days. I was told that the first thing she asked for was tobacco.

Continuing our journey through the valley of a tribu-

tary of the Santa Cruz, we reached Fort Buchanan. This fort, like most of our military establishments in the Rocky Mountains, consisted simply of a few adobe houses, scattered in a straggling manner over a considerable area, and without even a stockade defense. What object the Government had in prohibiting the building of either block or stockade forts I could never learn. Certainly a more useless system of fortification than that adopted throughout the Indian countries cannot be well imagined. The Apaches could, and frequently did, prowl about the very doors of the different houses. No officer thought of going from one house to another at night without holding himself in readiness with a cocked pistol. During the subsequent troubles with the Indians, when the scattered white population was being massacred on all sides for want of protection the Government was bound to give, the commandant needed the whole force of 150 or 200 men to defend the United States property, while with a better and no more costly system of fortification this could have been accomplished with one-quarter that number, and the lives of many settlers saved by the remaining force.

The next day, after riding out with Lieutenant Evans to see some springs which were forming a heavy deposit of calcareous tufa, we started on the return journey. We had passed a little distance beyond a thicket about 500 yards from the fort when we met a man driving a load of hay. In a few minutes, hearing the report of a gun, we looked back; but having made a turn in the road, and seeing nothing, we rode on our way. Several days afterward I learned that the man had been killed by Indians hidden in the thicket, and that the shot we heard was the fatal one. The Apaches were probably few in number, as they did not attack us.

The victim was a young man from the Southern states and a letter in his pocket showed that he had been to California to free and place in safety a favorite slave. On his way home, finding himself out of money, he had stopped to earn enough to carry him through, when he died the common death of the country. Four years later my successor, Mr. W. Wrightson, and Mr. Hopkins were killed at this same thicket by Apaches, who afterwards massacred the few soldiers left to garrison the fort.

The valley of Santa Rita had been, it is said, twice during the past two centuries the scene of mining industry; and old openings on some of the veins, as well as ruined furnaces and *arastras,* still existed. But the fierce Apaches had long since depopulated the country, and, with the destruction of the great Jesuit power, all attempt at regular mining ceased.

The object of the Santa Rita Company was to reopen the old mines, or work new veins, and extract the immense quantities of silver with which they were credited by Mexican tradition. In Mexico, where mining is the main occupation of all classes, tales of the enormous richness of some region, always inaccessible, are handed down from generation to generation, and form the idle talk of the entire population. The nearer an ancient mine to the heart of the Apache stronghold, the more massive the columns of native silver left standing as support at the time of abandonment. It is not strange, therefore, when we consider how easily our people are swindled in mining matters, that in those times we found them lending a willing ear to these tales, and believing that "in Arizona the hoofs of your horses throw up silver with the dust."

A number of veins had been found and slightly opened. Most of them carried argentiferous copper ores, some had

galena rich in silver, and one had native silver. They were, however, thin veins. The problem was to explore them in hope of their enlarging into *bonanzas*. The company owned a large old Spanish grant covering extensive mineral possibilities, but they had but little capital. It was necessary to work up all the ore found during exploration. Then, too, a method had to be decided on for reducing the peculiar varieties of ore.

My education had been connected with processes for working on a large scale in furnaces built with fire-proof materials, and using elaborate machinery. The country offered no fire-proof materials. A thousand fire bricks had, indeed, been sent by wagon from the East, but the Comanches in Texas had killed the driver, burned the wagon, and stolen the horses. We had no machinery.

We built furnaces, for both smelting and cupelling, of sun-dried mud bricks, much like those of the Mexicans.

Fortunately we had a large blacksmith's bellows. We had also an intelligent American carpenter, and, together, we rigged up a method of working the bellows by horse-power for blowing air into the furnace.

We made good charcoal from the *mesquite acacia*.

Although the pure minerals were very rich, we had not enough ore to meet the expense, for the veins were thin, and our work was mere prospecting.

We were a small group at the Santa Rita. Grosvenor, the chief, proved himself a strong and lovable character, and was an artist and an engraver on wood.

Mr. S. Robinson, the bookkeeper, had studied medicine under Dr. Oliver Wendell Holmes, and had settled in Cincinnati. Like Grosvenor, and myself, Robinson had succumbed to the lure of the golden desert.

Our cook, named Schmidt, I think, was a German, a very poor cook, but a brave man.

These, with myself, are the *dramatis personæ* of the tragedy of the Santa Rita.

I look back on my life in the early months of my stay there as full of quiet charm and interest. In the semi-desert character of its peculiar plant and tree life, like that of all Arizona, south of the Gila, it was in most respects unique among the regions of the world. The weirdness of the scenery by day, and yet more weird in the strong contrasts of the brilliant Arizona moonlight; the character of the outlaw American and Mexican inhabitants, and the human background of savage Apaches, all lent an undertone of adventure and of danger.

CHAPTER XVIII

OUTLAWS AND APACHES

THERE were some forewarnings which lent excitement to the life upon which I had now entered. The population of Arizona, excepting a few widely separated American ranch owners and miners, was made up of outlaws. There were refugees from the vengeance of the San Francisco Vigilance Committee, and from the States, and there were escaped convicts from Australia. The labor element consisted of Mexicans, largely outlaws from Sonora. Back of these were the ever-present, rarely visible Apaches. Each of these elements was charged with bolts that might at any moment, at any place, strike from a clear sky. When I arrived at the mine the blacksmith, named Rogers, was an escaped convict from Australia. He was in the habit of having chills, and would come shaking to Grosvenor for quinine, which he could only take in a cup full of whiskey. His chills became so frequent that we grew suspicious. So one day the chief refused him his dose and told him he only wanted the drink. Rogers sprang across the room at Grosvenor with a drawn knife. Grosvenor parried the blow and knocked the man down, and we disarmed him.

There was no semblance of law or of constituted civil authority in Arizona. Every man was judge, jury, and sheriff; back of him was the quickly formed Vigilance Committee. I said Rogers must be hanged at once. On the other hand Grosvenor made him stand up, and gave him fifteen minutes to be off the property.

A few days later one of our number walking in Tubac was hailed from a house by Rogers, who asked him in. Rogers opened a box and drawing out a string of human ears said: "Them's eighteen pairs of men's ears. I've sworn I'll make it twenty-five, and two pairs is comin' from your mine; *sabe?*"

There was a sequel. Rogers had gotten an influence over a young man from the East who had gone to the bad. Together they waylaid and killed a man to get his horse and arms. This might have passed unnoticed if the victim hadn't been more popular than the two. Since he was, Rogers and his pal made off to Sonora. After some time a Mexican brought into Tubac a letter addressed: "To the Honorable *Alcalde* (Mayor) of Tubac." There being no *Alcalde,* honorable or dishonorable in Tubac, nor any other authority of any kind, the first-comer opened the letter. It was from the *Alcalde* of the city of Chihuahua. It said that two Americans had been seen together on horseback approaching the city, and since only one of them had entered leading a riderless horse, and carrying two guns, a search was made, and the body of the other man, shot in the back, was found in the brush. They were holding the man, who called himself Rogers, in jail, and they asked where they should deliver him. No one answered, because no one wanted Rogers.

Some time later word came, in a Texas paper I think, that a man, by the name of Rogers, had been found at the point of death by an old Mexican near El Paso del Norte across the river from Texas. The old man and his wife had taken Rogers into their house, and had nursed him back to health. In the night Rogers had killed the old man and his wife and daughter, to get the three or four dollars they had saved. The neighbors had

tracked him, hung him up by his heels, and roasted him with a fire under his head.

Rogers was one of the very few white men that I have met through a life of ample experience of human nature in lawless environments who were thoroughly and meanly bad to the core.

There were two brothers from the East who were opening a mine, San Pedro, several miles beyond Fort Buchanan. They had with them another American and a German mining engineer named Bronkow, and a number of Mexican workmen. One of the brothers went one day to the fort for supplies and returned to the mine late at night. In hunting for matches he stumbled over a man lying on the floor. Stooping down he put his hand into a pool of blood. In the dark he made his way into another room and, in his excitement, fell over another body.

Not finding matches he mounted his horse and hurried to the fort, distracted by the uncertainty as to whether his brother was one of the dead.

He reached the fort at daybreak. A number of soldiers, and Grosvenor, who happened to be at the fort, returned to the mine with him. They found that the bodies in the house were the brother and the other American. The mining engineer, Bronkow, was missing, but after a long search he was found in the bottom of a shaft, where he lay dead with a long rock drill run through his body.

The Mexicans were gone. They had killed the Americans and, after robbing the house, had escaped to Sonora with the horses.

The murdered men were all friends of Grosvenor. He brought away the miner's compass and a chemical thermometer as a memento of his German friend.

THE INDIANS YELLED AND FLOURISHED LANCES AND BOWS.

There was a young Easterner, a "tenderfoot" like me. We had heard so much of the Apaches ever since our arrival, and of their bloodthirstiness, that we were longing to meet them, for each of us had a rifle made specially for such an emergency. Mine had two barrels, one for a large ball and one for a small one; incidentally it only weighed something less than eighteen pounds.

We two had come in to dinner, having hitched our horses to the door posts. Suddenly a Mexican rushed in shouting:

"Los Apaches, los Apaches, they have stolen horses."

We were delighted. Here was our chance. We would overtake and shoot those Apaches. Nothing more easy.

In an instant we were in the saddle. About a mile off we saw two horses being driven off by two Indians. As we gained on them slowly we could see that the Apaches were really running with a peculiar swaying movement of the body. They were naked, their hair was streaming out behind.

By the time we were within less than two hundred yards of them the Indians and horses had disappeared beyond the dense thicket that bordered the course of a stream. Then suddenly the whole face of that thicket was alive with naked, painted Indians. They yelled and flourished lances and bows.

Our terrified horses stopped short and plunged, nearly unseating us. They wanted to go home as quickly as possible. So, too, did each of their riders, but each one of us was afraid of being thought a coward by the other. So, having heard that the proper thing was to dismount and shoot, holding the horse with your arm through the bridle, we jumped off and tried to take aim. We pulled triggers; both missed fire.

The Apaches jeered; they jumped up and down slap-

ping their backsides. It was our salvation that we were able to vault into our saddles instead of mounting by the stirrup.

As we started off there came a shower of spent arrows after us.

Those Indians could have killed us easily had they wished, but the Apaches had not as yet been roused to a just resentment for treachery on the part of our troops.

I think they were moved by a sense of humor, and by the apparent bravery of the two tenderfeet; for of course they didn't know why we hadn't run away at first.

This was a valuable lesson. It gave me respect for the Indian, and some insight into his nature. I felt humbled by the knowledge that we owed our lives to the sense of humor on the part of an enemy we had so casually thought of killing and, let me confess it, of scalping too.

Not long after this three mounted Apaches stole some loose horses. We were in quick pursuit, four of us, when we came suddenly on thirty or forty unmounted Indians. They were running over a wholly open area covered with rocks one or two feet in diameter. The ground sloped gradually away from us, and on each side to ravines.

As soon as we saw them, they instantly disappeared from sight. Two or three musket balls whizzed past us, and the smoke showed that the enemy was lying flat, hidden behind the rocks. We fired at the places the smoke came from, and waited a few minutes to spot a head. Then we charged. Not an Apache was there. They had wriggled away under cover of the rocks into the ravines and off. Their tactics were masterly. They had evidently fired to concentrate our attention on one place, while they escaped.

Early in April, I think, we had bought forty head of

cattle. Because they were new to the place we put them into one of the *corrals*, and turned thirty or more of our horses out, knowing that they would stay near the house. Everything seemed all right.

That evening, while we were at supper, a skunk boldly entered the room. We watched it with great respect while it passed by the table, hoping it would go out by the door beyond. But it walked into the large room that served for stores and office. At the far end the animal hid itself under a pile of bags of flour that stood on boards raised about six inches above the earthen floor. With a candle I located the skunk. I fired and killed; but too late, the enemy shot first.

How little we knew what that shot was to cost us! Our thoughts were occupied with the new aspect of the atmosphere. I dragged out the skunk and, holding it by the tail, went out and hurled it forth to enliven the night air.

Then I placed under the pile of flour a saucer filled with materials for slow generation of chlorine gas. The effect was magical; the room filled with the fragrance of a really delicate perfume. We went to bed quite happy.

The light of the just rising moon showed one of the horses standing asleep in front of my window.

Looking out at daybreak the first thing we saw was a thin layer of snow covering the ground. Then we saw the tracks of several Apaches. Not a horse. A fine watch dog lay chained in his kennel at the gate of the *corral*, not fifty feet from the house. He was still there and alive.

The dead skunk lay at the very door of the kennel; it had landed under the nose of the dog, obliterating the odor peculiar to the Apache.

Snow was still falling very gently, and we saw that the tracks could be hardly an hour old.

The Indians had all our horses, except two or three that were away, so we set out on foot in pursuit. The horse tracks were plain, and we followed them easily for several miles, but they showed that the Indians were now mounted, and going rapidly. My heavy rifle grew heavier and heavier till I lay down exhausted. The rest of the party returned soon, with an old horse that had given out and been abandoned.

The skunk had had his revenge; the Apaches had our horses.

CHAPTER XIX

THE APACHE TERROR

THE incidents I have given were mere omens of what was to come.

Soon after the loss of our horses, there came word that the troops were ordered to abandon the country and go to the East to be employed in the war.

There were two bodies of these, one of infantry at Fort Buchanan, about twenty miles from us, and one of dragoons sixty or seventy miles away. These troops were the only protection that stood between us and the Apaches.

The news of the impending withdrawal caused great excitement among the small number of settlers who were scattered over the country.

To make the matter worse, the military began an uncalled-for war with the Apaches. In April, I believe, some Indians, of what tribe was not known, carried off a cow and a child belonging to a Mexican woman living with an American. Upon the application of the latter, the commandant at Fort Buchanan despatched a force of seventy-five men to the nearest Apache tribe. The only interpreter attached to the expedition was the American who was directly interested in the result.

Arriving at Apache Pass, the home of the tribe, the lieutenant in command raised a white flag over his tent, under the protection of which six of the principal chiefs,

including Cochese, great chief of the Apache nation, came to the camp, and were invited into the tent.

A demand was made for the child and cow, to which the Indians replied, truly or falsely, that they had not been stolen by their tribe.

After a long parley they were seized. One of the number, in trying to escape, was knocked down and pinned to the ground with a bayonet. Four others were bound, but Cochese, seizing a knife from a cot, slashed his way through the canvas and escaped, with three bullets in his body, fired by the outside guard.

And this happened under a United States flag of truce!

At this time three of the most powerful tribes of the nation were concentrated at Apache Pass, and, when Cochese arrived among them, a war of extermination was immediately declared against the whites.

The next day they killed some Mexican prisoners, and in retaliation the five chiefs were hanged in sight of their people. Our troops, after being badly beaten, were obliged to return to the fort.

In the meantime orders came for the abandonment of the territory by the soldiers. The country was thrown into consternation. The Apaches began to ride through it rough-shod, succeeding in all their attacks. The settlers, mostly farmers, abandoned their crops, and with their families concentrated for mutual protection at Tucson, Tubac, and at one or two ranches, and at a distant mine.

When, in addition to this, the news came of the beginning of the rebellion in the East, we decided that, as it would be impossible to hold our mines, our only course was to remove the portable property of the company to Tubac. We were entirely out of money, owing back pay to a considerable force of Mexican workmen,

and to two or three Americans, and we needed means for paying for the transportation of the property, and for getting ourselves out of the country.

Our stock of ore was far too small to furnish the amount of silver needed to meet these demands, and our main hope lay in the possibility of collecting debts due to the company. In pursuance of this plan I started alone, but well armed, to visit the Heintzelman mine, one of our principal debtors. The ride of forty miles was made in safety, and in the afternoon I reached the house of the superintendent, Mr. J. Poston. Not being able to obtain money (for no one could afford to part with bullion, even to pay debts) I took payment in ore worth nearly $2,000 per ton, together with a little flour and bolts of cotton cloth. In the course of the afternoon this was despatched in charge of two of the most fearless Mexicans at the mine in Poston's service.

The next morning, April 24, 1861, I started homeward alone, riding a horse I had bought, and driving before me the one that brought me over. I had so much trouble with the loose animal that night found me several miles from our *hacienda*.

Only those who have traveled in a country of hostile Indians know what it can be to journey by night. The uncertain light of the stars, or even of the moon, left open the widest field for the imagination. Fancy gave life to the blackened yucca, and transformed the tall stem of the century plant into the lance of an Apache. The ear of the traveler listened anxiously to the breathing of his horse; his eye ever on the alert, before and behind, watched the motions of the horse's ears, and looked for the lurking place of an Indian.

Still; night was the less dangerous time to travel, for one was not as easily seen at a distance as by day. But

after a few night journeys I found the nervous tension so unbearable that I always chose the daytime, preferring to run a far greater risk of death to being made the prey of an overstrained imagination. Then, too, in such a state of society as then existed, the traveler in the dead of night approached a solitary house, perhaps his own, with much anxiety; it was uncertain whether he might not find only dead bodies.

About three miles from the *hacienda,* in the most rocky part of the valley, the horse in front stopped short, and both animals began to snort and show signs of fear. This may have been due to Indians or to a mountain lion. Both horses started off at a runaway speed, leaving all control over either one out of the question. Fortunately, the free horse, followed by my own, first made a long circuit, and then bounded off toward the *hacienda.* After a breakneck course over stony ground, leaping rocks and cacti, down and up steep hills, and tearing through thorny bushes, with clothing torn and with legs pierced by the Spanish bayonet, I reached the house.

The wagon with the ore, although due that morning, had not arrived, and this was the more remarkable as I had not seen it on the road. When noon came, and the ore still had not arrived, we concluded that the Mexicans, who well knew its value, had stolen it, packed it on the mules, and taken the road to Sonora.

Acting upon this supposition, Grosvenor and I mounted our horses, and, armed and provisioned for a ten days' absence, started in pursuit. Each of us carried a carbine and two revolvers, and a blanket rolled behind the saddle. Our provisions were simple. Each had a bag of *penole* — powdered parched corn mixed with nearly half its weight of Mexican brown sugar; coffee, and a tin cup

completed our outfit. We rode two miles to a point where the road turned to the right to set an easy grade over a spur of the *mesa*. To avoid this bend we rode straight ahead on a trail over the spur and descended to cross the narrow valley beyond. The wagon road crossed a few hundred yards further up, and then by an easy ascent joined our trail at the top of the *mesa*.

We were just crossing the bottom of the valley to climb the opposite hill when, looking up, we saw the missing wagon just coming in sight and beginning the opposite descent. One of the Mexicans rode a wheel mule, while the other was walking ahead of the leaders. I noticed that neither of them carried their guns, which were probably left in the wagon. We had evidently judged our men wrongly, and when Grosvenor proposed that we should go on and come back with them I objected, on the ground that the Mexicans, seeing us prepared for a journey, would know at once that we had suspected them. We therefore decided to turn back, but taking another way homeward we quickly lost sight of the wagon. After riding a few hundred yards we dismounted at a spring, rolled a cigarette, and then rode home.

As the afternoon passed away without the arrival of the wagon, we supposed it had broken down, and at twilight Grosvenor proposed that we should walk out and see what had caused the delay. Taking down my hat, I answered: "All right, but to-morrow I've got to begin the smelting, and I want to finish to-night the map and record of the property needed for future use. After all, the Mexicans will send up if they need any help." My friend said: "You're quite right. I'll only go a little way for a walk." It was soon dark, and Robinson and I sat down to tea. By the time we left the table Gros-

venor had been out half an hour, and we concluded to go after him.

I will diverge here to tell of a remarkable dream of Grosvenor's which recurred to us after the events which follow this point in my narrative. Grosvenor had told it early in the winter. He had been born in Ohio, and had never seen the sea. When he was a child he dreamed that he stood on the edge of the ocean. He saw a small black line rise on the horizon. He watched it and saw it rise slowly. A small black spot appeared under it. He said the thing then looked like an exclamation point. Then he saw that it was moving up and down. It held him fascinated. Days and weeks seemed to pass as the thing slowly rose and fell. It rose higher each time than the time before, and grew ever longer and longer till it reached high toward the sky; and this continued till he knew that with the next descent the thing would crush him, but just before it could strike him he awoke.

Grosvenor said that after this the dream came back so often that he grew thin, and his health was affected by it. This lasted for years, the dream coming more rarely till it stopped its torments when he was in his teens.

Grosvenor told this so dramatically that it made a strong impression on us; the "exclamation point" became a household word with us.

About the beginning of April Grosvenor went alone to Tubac for the mail. When he returned he said:

"Pumpelly, I wish you would send some Mexicans to the Point of Rocks to look for tracks. When I got there I heard 'ha! ha! ha!' I couldn't see any one, but there must be Indians near."

The trackers returned without having found fresh tracks.

The next week Grosvenor went again alone for the mail. When he returned he said:

"Pumpelly, I wish you would take the trackers and look yourself. When I came near the Point of Rocks, I heard it again: 'ha! ha! ha!' There must be Indians around there."

So I went with the Mexicans. We found no fresh signs.

The next week Grosvenor went again for the mail. I met him as he returned in the afternoon. He said:

"Pumpelly, I want to take the Mexicans and search the place myself. I heard clearly the same shout: 'ha! ha! ha!'"

When Grosvenor came back before dusk, and I held his horse while he got off, he seemed downcast. As he passed to go into the house he turned to me:

"Pumpelly, *I have* HEARD *the exclamation,*" evidently referring to his dream.

Now I will resume my narrative after the delay of the wagon.

Accompanied by Robinson, and leaving the cook to take care of the house, I walked along the Tubac road. We were both well armed; and the full moon, just rising above the horizon behind us, brilliantly lighted the whole country. We had gone about two miles, and were just beginning to ascend the grade over the spur mentioned above when, hearing the mewing of our house-cat, I stopped, and, as she came running toward us, stooped, and took her in my arms.

As I did so, my attention was attracted by her sniffing the air and fixing her eyes on some object ahead of us. Looking in the direction thus indicated, we could distinguish near the roadside on the top of the hill the crouching figure of a man, his form for a moment just

defined against the starlit sky, and then disappearing behind a cactus. I dropped the cat, which bounded on ahead of us, and we cocked our pistols and walked briskly up the hill. But when we reached the cactus the man was gone. Of Grosvenor we as yet saw nothing. Continuing our way at a rapid pace and full of anxiety, we began the long descent toward the *arroyo,* from which we had seen the wagon at noon. Turning a bend about half-way down, we caught sight of the wagon drawn off from the road on the further side of the *arroyo.* The deep silence that always reigns in those mountains was unbroken, and neither mules nor men were visible. Observing something very white near the wagon, we at first took it for the reflected light of a camp-fire, and concluded that the Mexicans were encamped behind some rocks, and that with them we should find our friend. But it was soon evident that what we saw was a heap of flour reflecting the moonlight. Anxiously watching this and the wagon, we came around a slight bend in the road, and had approached within about twenty yards of the wagon when we both started back — we had nearly trodden on a man lying in the road. My first thought was that it was a strange place to sleep in, but he was naked. The first idea had barely time to flash through my mind, when another followed — it was not sleep but death.

As we stooped down and looked closer, the truth we had both instinctively felt was evident — the murdered man was Grosvenor.

For the first time I stood an actor in a scene of death, the victim a dear friend, the murderers and the deed itself buried in mystery.

His head lay in a pool of blood; two lance wounds through the throat had nearly severed the head from the

body, which was pierced by a dozen other thrusts. A bullet hole in the left breast had probably caused death before he was mutilated with lances. Evidently he had not moved since he fell by the shot that took his life. He lay face down, and as the feet had been stretched out in stripping the corpse so they remained stretched out when we found him. The body was still warm; indeed, he could not have reached the spot when we left the house.

Grosvenor died at the place where he had heard, or thought he heard, the exclamation that he connected with his dream.

I have seen death since, and repeatedly under circumstances almost equally awful, but never with so intense a shock. For a minute that seemed an age we were so unnerved that I doubt whether we could have resisted an attack, but fortunately our own situation soon brought us to our senses. We were on foot, two miles from the house, and the murderers, whoever they might be, could not be far off, if indeed the spy we had seen had not already started them after us. Looking toward the wagon, I thought I could discover other bodies; but we knew that every instant was of great importance, and, without venturing to examine closer, we started homeward, the cat going ahead of us. There was only one white man at the *hacienda,* and a large number of *peons,* and we did not yet know whether the murderers were Indians, or the two Mexicans, who might be in collusion with our own workmen.

If they were Indians, we might escape by reaching the house before they could overtake us; but if they were our Mexicans, we could hardly avoid the fate the cook at the house must already have met with.

Uncertain whether we were going away from danger or into it, we walked rapidly on constantly on the alert. In

this manner we went on till we reached a place where the road lay for some distance through a dense thicket — the very spot for an ambush. We had now to decide whether to take this, the shorter way, or another which, by detaining us a little while longer, would lead us over an open country, where we could in the bright moonlight see every object within a long distance. The idea of being able to defend ourselves tempted us strongly toward the open plain, but the consciousness of the value of every minute made us decide quickly to take the shorter way. Nothing happened until, within a short distance of the *hacienda,* we began to hear Apache signals given and answered, and looking back we saw several Indians coming into view; but we gained the door safely, and found all as we had left it. The American, unaware of danger, was making bread; and the Mexicans were asleep in their quarters. We kept guard all night, but were not attacked.

Before daylight we despatched a Mexican courier across the mountains to the fort, and another to Tubac, and then went after Grosvenor's body. We found it as we had left it, while near the wagon lay the bodies of the two Mexican teamsters. Poston came in the forenoon with fifteen Papago Indians who were able to read the history of the whole murderous affair. The wagon must have been attacked within less than five minutes after we had seen it at noon, indeed while we were resting and smoking at the spring not four hundred yards from the spot. A party of Indians, fifteen in number, as we found by the tracks, had sprung upon the unarmed Mexicans; the sand showed the marks of a desperate hand to hand struggle. When they had killed the men, the Apaches cut the animals loose, packed the empty bags and cotton cloth, and went to a spring a mile or two dis-

tant, where they feasted on a mule. A party was left behind to waylay such of us as might come out to meet the team. When Grosvenor neared the spot, he was shot by an Indian, who, crouching behind a cactus about ten feet distant, had left the impression of his gunstock in the sand. At the same instant two others lanced him through the throat. Knowing well that their victim would be sought by others, they had left the spy we had seen; and had not the cat directed our attention to him at the moment when he was moving stealthily away, thereby causing us to walk rapidly to the scene of the murder, and faster back, we could hardly have escaped the fate of our friend. We remembered that our dogs had barked all the afternoon with their noses pointed west. Both they and the cat had scented the Indians or the carnage.

During the day, April 26, 1861, Lieutenant Evans arrived with a force of nineteen soldiers, having with difficulty obtained the consent of his commandant, and soon after Colonel Poston reached the mines with a party of Americans. Graves had been dug, and, after reading the burial service and throwing in the earth, we fired a volley and turned away, no one knowing how soon his time might come.

CHAPTER XX

A RIDE FOR LIFE

I NOW foresaw a long and dangerous work before us in extracting the silver from the ore. We could, indeed, have abandoned the mines, and have escaped by accompanying the military, who were to leave in two weeks. But both Mr. Robinson and myself considered that we were in duty bound to place the movable property of the company in safety at Tubac, and to pay in bullion the money owing to the men. To accomplish this would require six weeks' work at the furnace, crippled as were all operations by the loss of our horses and mules.

It was of the first importance that we should increase our force of Americans, not only for protection against the Apaches, but more especially against the possible treachery of our Mexican workmen, for at almost every mine in the country a part or all of the whites had been murdered by their *peons*. A man named Stickney, one of the party which had come that day from Tubac, was engaged on the spot. Partly in the hope of getting a small force of soldiers who should remain till the abandonment began, and partly to persuade two Americans who lived on the road to the fort to join us, I resolved to accompany Lieutenant Evans, who was obliged to return the next day.

Taking with me a young Apache who had been captured while a child, and had no sympathy with his tribe, I rode away with Lieutenant Evans, intending to return

the next day. The wagon road lay for ten miles along a tributary of the Sonoita valley, then ascended the Sonoita for twelve miles to the fort, where a bridle-path across the hills shortened the distance some two or three miles, by leaving the road before the junction of the two valleys. To reach the house of the Titus brothers, whom I wished to see, we should have to follow the wagon road all the way; and as more than a mile of it before the junction of the valleys lay through a narrow and dangerous defile, on an Apache war trail that was constantly frequented by the Indians, Lieutenant Evans would not assume the responsibility of risking the lives of his men in a place where they would be at such disadvantage. While I felt obliged to acknowledge that it would be imprudent to take infantry mounted on mules through the defile, it was of the first necessity that I should see the Americans living near the junction of the valleys. At the point where the hill trail left the road, bidding good-by to Lieutenant Evans, who, could he have left his men, would have accompanied me himself, I was soon alone with Juan, my Apache boy. As we neared the gorge I observed that Juan, who was galloping ahead, suddenly stopped and hesitated. As I came up he pointed to the sand, which was covered with fresh foot-tracks.

It was evident that a considerable party of Indians had been here within half an hour, and had suddenly dispersed in different directions in the hills. Our safest course seemed to be to press forward and reach Titus's house, now about two miles off. We were on good horses, and these animals, not less alarmed than ourselves, soon brought us through the defile to the Sonoita creek. We slipped our horses' bridles without dismounting, and refreshed them with one long swallow. We had barely left the creek when we passed the full-length im-

pression of a man's form in the sand, with a pool of blood, and at the same instant an unearthly yell from the hills behind us showed that the Apaches, although not visible, were after us, and felt sure of bringing us down. Our horses, however, fearing nothing so much as an Indian, almost flew over the ground and quickly brought us in sight of Titus's *hacienda*. This lay about two hundred yards off from the road in a broad valley shaded by magnificent live-oaks.

As we rode rapidly toward the houses I was struck with the quietness of a place generally full of life, and said so to Juan.

"It's all right," he replied. "I saw three men just now near the house."

But as we passed the first building, a smith's shop, both horses shied, and as we came to the principal house a scene of destruction met our eyes. The doors had been forced in, and the whole contents of the house lay on the ground outside, in heaps of broken rubbish. As I started to dismount, to look for the bodies of the Americans, Juan begged of me not to stop.

"They are all killed," he said, "and we shall have hardly time to reach the road before the Indians come up. Promise me," he continued, "that you will fight when the devils close with us; if not I will save myself now."

Assuring the boy, whom I knew to be brave, that I had no idea of being scalped and burned without a struggle, I put spurs to my horse, and we were soon on the main road, but not a moment too soon, for a large party of Apaches, fortunately for us on foot, were just coming down the hill, and entered the trail close behind us. A volley of arrows flew by our heads, but in a few seconds our horses carried us out of reach, and the enemy turned

back. Slackening our speed, we were nearing a point where the road crossed a low spur of the valley terrace when suddenly several heads were visible for an instant over the brow of the hill, and as quickly disappeared. Instantly guessing that we were cut off by another band of Indians, and knowing that our only course was to run the gantlet, we rode slowly to near the top of the hill to rest our animals, and then spurred the horses onward, determined if possible to break the ambush. We were on the point of firing into a party of men who came in full view as we galloped over the brow of the hill, but instead of Apaches they were soldiers and Mexicans. They had been burying an American who had been killed that morning. It was the impression of this man's body which we had seen near the creek. He had been to the fort to give notice of the massacre of a family living further down the river, and on his return had met the same fate, about an hour before we passed the spot. An arrow, shot from above, had entered his left shoulder and penetrated to the ribs of the other side, and in pulling this shaft out a terrible feature of these weapons was illustrated. The flint-head, fastened to the shaft with a thong of deer-sinew, remained firmly attached while this binding was dry; but as soon as it was moistened by the blood, the head became loose, and remained in the body after the arrow was withdrawn. The Apaches had several ways of producing terrible wounds; among others by firing bullets chipped from the half-oxidized mats of old furnace heaps, containing copper and lead combined with sulphur and arsenic. But perhaps the worst, at short range, were produced by bullets made from the fiber of the aloe root, which were almost always fatal, since it was impossible to clear the wound.

On reaching the fort and seeing the commandant, I was told that he could not take the responsibility of weakening his force. As the troops from Fort Breckenridge were expected in a few days, I was led to believe that after their arrival I might obtain a small number of soldiers. But when, after several days had passed without bringing these troops, the commandant told me that not only would it be impossible to give us any protection at the Santa Rita, but that he could not even give me an escort thither, I resolved to return immediately with only the boy Juan. In the meantime a rumor reached the fort that a large body of Apaches had passed through the Santa Rita valley, and probably massacred our people, and were menacing Tubac. I was certainly never under a stronger temptation than I felt then to accept the warmly-pressed invitation of the officers to leave the country with the military, and give up all idea of returning to what they represented as certain death. But I felt forced to go back, and Juan and I mounted our horses. I had hardly bid the officers good-by when Robert Ward, an old frontiersman, joined us, and declared his intention of trying to reach his wife, who was in Tubac. As we left the fort a fine pointer belonging to the commandant followed us, and, as he had become attached to me, we had no difficulty and few scruples in enticing him away to swell our party. We took the hill trail, it being both shorter and safer, and had reached a point within three miles of the Santa Rita without meeting any fresh signs of Indians when the dog, which kept always on the trail ahead of us, after disappearing in the brush by an *arroyo*, came back growling, and with his tail between his legs. We were then two or three hundred yards from the thicket, and quickening our horses we left the trail and

crossed the *arroyo* a hundred yards or more above the ambush; for such the dry tracks in the sand, where we did cross, showed it probably to be.

We reached our mines safely, and found that, although they had been almost constantly surrounded by Apaches, who had cut off all communications with Tubac, there had been no direct attack. Our entire Mexican force was well armed, a fact which, while it kept off the Indians, rendered it necessary that our guard over the *peons* should never cease. Nor did we once, during the long weeks that followed, place ourselves in a position to be caught at a disadvantage. Under penalty of death no Mexican was allowed to pass certain limits, and in turn our party of four kept an unceasing guard, while our revolvers, day and night, were rarely off our persons.

CHAPTER XXI

SMELTING ORE UNDER DIFFICULTIES THE MINES ABANDONED

We had now to cut wood for charcoal, and to haul it in, stick by stick, not having enough animals to draw the six-horse wagons. This and burning the charcoal kept us nearly three weeks before we could begin to smelt. Our furnaces stood in the open air about one hundred yards from the main house, and on a tongue of land at the junction of two ravines. The brilliant light illuminating every object near the furnace exposed the workmen every night, and all night, to the aim of the Apaches. The whole Mexican force slept on their arms around the furnace, taking turns at working, sleeping, and patrolling, receiving rations of whiskey which were believed sufficient to increase their courage without making them drunk. In order to obtain timely notice of the approach of the Indians, we picketed our watch-dogs at points within a hundred yards of the works; and these faithful guards, which the enemy never succeeded in killing, probably more than once saved us from a general massacre.

During the long weeks we were isolated only rare word came from Tubac, and none from the East. One day there came a letter from Fort Buchanan containing news which showed how completely we were shut off from the world.

After repeated destructions of stations along the long

route through Texas and Arizona, the Indians had caused the abandonment of the Overland Mail, by destroying the stations and the superintendent. The end was tragic. The superintendent was making the last trip to close up the route. He had with him a guard of fifteen mounted Texas rangers. The coach carried, I think, $20,000 in gold, and was filled with passengers. At Steen's Pass they were attacked by a large band of Apaches. Not a soul escaped. When the spot was visited later, by a military party, it was seen that the whites must have held out long; lying flat behind stones and firing at the Indians, who used the same tactics, as was shown by the lead-battered stones.

More than one attempt was made by the Apaches to attack us, being always discovered in time, and failing to surprise us, they contented themselves with firing into the force at the furnace from a distance. In the condition to which we all, and especially I, had been brought by weeks of sleepless anxiety, nothing could sound more awful than the sudden discharge of a volley of rifles, accompanied by unearthly yells, that at times broke in upon the silence of the night.

The troops were still at the fort twenty miles away. The commandant made no move to protect the few Americans who were all within twenty or thirty miles of his post.

As already intimated, we were now four, Robinson, Stickney, the German cook, and I. While one stood guard at night, the others slept in their clothes. The first of those nights was one of those critical moments when, in darkness and danger, one is face to face with one's inmost soul. I was sleeping, dressed excepting shoes. A quick succession of shots and yells brought me to my feet and standing on the cold earthern floor. My knees

were knocking together. Afraid to show myself in such condition before my men, I sat down on my cot to recover a balance, and rolled a cigarette and smoked a whiff or two. The mental struggle was over; it had lasted hardly a minute, and I went out to the others, who never knew.

A young Mexican woman had told one of us that the *peons* had planned to kill us as soon as the silver should be refined. So I arranged to concentrate this work into the last two or three days, and to leave the mine as soon as the refining was finished, though it would probably mean a considerable loss of silver.

Despatching a messenger, who succeeded in reaching Tubac, I engaged a number of wagons and men, and on their arrival everything that could be spared was loaded and sent off. The train was attacked and the mules stolen, but the owner and men escaped, and, bringing fresh animals, succeeded in carrying the property into Tubac.

At last the result of six weeks' smelting lay before us in a pile of lead *planchas* containing the silver, and there only remained the separating of these metals to be gone through with. During this process, which I was obliged to conduct myself, and which lasted some fifty or sixty hours, I scarcely closed my eyes; and the three other Americans, revolver or shotgun in hand, kept an unceasing guard over the Mexicans, whose manner plainly showed their thoughts. Before the silver was cool, we loaded it. We had the remaining property of the company, even to the wooden machine for working the blast, in the returned wagons, and were on the way to Tubac, which we reached the same day, the 15th of June. Here, while the last wagon was being unloaded, a rifle was accidentally discharged and, the ball passing through my hair above the ear, deafened me for the whole afternoon.

Thus ended my experience of eight months of mining operations in an Apache stronghold. It was none too soon. Indeed I am the only one of at least five successive managers of the Santa Rita who was not killed by Mexicans or Indians.

CHAPTER XXII

ACROSS THE DESERT TO PAPAGORIA AND THE SEQUEL

WHEN we deposited the movable property of our company at Tubac, we did so under the supposition that that village would be a point where, until the fresh troops whose coming was rumored should arrive, a large part of the white and Mexican population would concentrate for the mutual defense. As soon as the contents of the wagons were stored away, the silver assayed, and our debts paid, I determined to make a journey for recreation into the Papagoria — the land of the friendly Papago tribe. In company with Colonel C. I. Poston and Mr. J. Washburn, I reached the Cerro Colorado or Heintzelman mine, then being worked by the first-named gentleman. Here we took a Mexican guide, and laid in our provisions, consisting of *pinole* — powdered parched corn and sugar — and coffee.

Early the next morning we left the mine, and, following the Indian trail westward for several miles, came onto the great Baboquiveri plain. This broad stretch of wild grassland being one of the main thoroughfares of the Apaches, we were obliged to keep a good lookout all day. But notwithstanding the great heat, and the danger from Indians, the combined effect of the grand scenery and the prospect of reaching a country where comparative safety would allow a few nights of unguarded sleep filled me with new life, and I gave myself up again to the

fascinating influence of Nature in the Rocky Mountains.

Taking a diagonal course over the plain, we reached the foothills of the Baboquiveri range at the approach to Aliza Pass. It was late at night before we had wound through the rocky defile, and by the light of the full moon ascended to the spring near the top. After watering the horses from our hats, and drinking a supper of *pinole* in water ourselves, we took turns at watching and sleeping.

Early the next morning we reached the summit of the pass. The Baboquiveri range formed the boundary between the Papagoes and Apaches, two tribes differing widely in appearance, character, and habits, and between whom there has ever been enmity.

The Papagoes carefully guarded the approaches to their country, and these passes have been the scenes of many desperate battles. But the desert character of the Papagoria is its best defense, since, in view of the great scarcity of water over an immense area, it would be also certain death to a party of Apaches to penetrate far into it. At the summit of the pass stands a large pile of stones literally bristling with arrows, both old and new. Whether this was a landmark or battle monument, I did not learn.

A ride of twenty miles over a gravelly plain, which reflected the intense heat of the sun, brought us to Cahuabi, a Papago village on the skirt of the desert.

Most of the Papago villages on the desert were several miles from any water, and one of the chief occupations of the women was the obtaining of it, and bringing it home. I say obtaining, for getting water there was often a labor of patience, skill, and danger. In many places it was to be had only by digging. A spot was chosen where the rock dips under a deposit of sand, and

an opening like a quarry was sunk in the latter, exposing the rocky surface. The little water that trickles slowly, drop by drop, along the plane of contact between sand and stone, was collected with the greatest care till the labor was rewarded by a few quarts in the earthern vessel which the woman then bore off on her head, perhaps six or nine miles.

After an excursion into the desert to visit a mine being opened by some Mexicans, we began our homeward journey, intending to reach Arivacca by a trail crossing the mountains south of the Baboquiveri peak. We encamped for the night near the western foothills of the range, and from our elevated position the vast plains, stretching away toward the Pacific, were spread out before us. To this grand landscape the brilliant light of the full moon lent enchantment, rendering more weird the unfamiliar plant forms, silvering the distant ridges of barren granite and the surface of the boundless desert. Not a sound, not even a breath of air, broke the silence of the night.

Soon there came the doleful bark of the red wolf, growing louder and nearer as the animals approached and hovered about the camp.

In the morning I found that the rawhide thongs had been gnawed off my saddle, although it had served me for a pillow all night.

Before noon we reached Fresnal, a Papago village. Near this we encamped by a spring of good water, surrounded by fine ash and *mesquit* trees, and lying in a ravine descending from the Baboquiveri peak. Our intention was to leave Fresnal the next morning, but an accident occurred by which all our plans were changed. While we were eating our *pinole,* a sandstorm was seen whirling rapidly toward us from the desert, and we all hastened to wrap our firearms in the blankets, to protect

them from the penetrating dust. In doing this Washburn let his revolver fall. It went off and drove a ball into the inner side of his right thigh. An examination showed that the ball had not come out, and it seemed almost certain that it had entered the abdomen, and that death must soon follow. A hasty consultation resulted in sending a Papago on Washburn's horse to Tucson, about sixty miles distant, for a doctor, while Colonel Poston, with the guide, started by the trail over the mountain to bring an ambulance from Arivacca, about forty miles off, and I remained to nurse our wounded companion. Washburn complained of pain in his back between the shoulders and along the spine. An examination showed something hard, below the neck, which might be the ball. Being entirely ignorant of everything relating to surgery, I did not venture to cut it out, but decided to wait for the doctor, in the meantime keeping the wound constantly washed. After an absence of less than two days and a half, the Papago returned, having nearly killed the fine horse he rode, and bringing a letter, in which the doctor regretted the impossibility of undertaking a journey in the existing condition of the country. He sent some medicines but forgot to give directions. Among the things was some gum camphor. This I rubbed up in water and with it washed his wound.

The days passed without bringing any news from Colonel Poston, and, concluding that another friend had swelled the long list of victims to the Apaches, I awaited the time when I should either help my companion into his saddle or dig his grave. Recovery seemed almost impossible, with the thermometer ranging from 116° to 126° F. in the shade, and when night brought only a parching desert wind.

Day after day passed without bringing any change in

our prospects, or in the condition of the wounded man. The Papagos of the neighboring village, from whom I bought milk and boiled wheat, were at first friendly. Their frequent visits to our camp relieved the tedious monotony of the long days, and I occupied my time in learning their language. But gradually these visits to our camp became rarer, and finally ceased altogether. The old chief raised the price of milk from one string of beads per quart to two strings, and the smallness of my supply of this currency rendering it necessary to raise their value in the same proportion, our relations became daily less and less friendly. Our isolated position thus grew every day more unpleasant, surrounded as we were by Indians who were nominally friendly, but who had murdered more than one helpless traveler.

Many days had passed since the accident when a Mexican arrived from Colonel Poston, bringing provisions and a letter. He had been unable to secure an ambulance to send for Mr. Washburn and suggested that I have the wounded man brought in on a litter by Papagoes or mules.

I immediately made the proposition to the chief, beginning by offering a horse, and ending with the offer of horses and arms. It was useless. The old man was tempted; but most of the warriors being away for the summer, he would not venture to expose the village to a raid from the Apaches by sending the young men with us.

The Mexican left the welcome provisions and returned to Arivacca, with a note saying that I might try to get to Haric when Washburn should be able to travel or should have died. Again the same tedious routine of watching and waiting was resumed. Nearly all my time during the day, and much of the night, was occupied in keeping

camphorated water on Washburn's wound. By this means, together with the dryness of the climate, it was kept free from gangrene, and the condition of my patient was apparently improving.

One day the unexpected but welcome sound of a creaking wheel was followed by the appearance of a wagon drawn by mules, and escorted by eleven Mexicans. It was a party that had gone from Sonora, over the desert, to open a mine, and was now returning with a load of ore. The scarcity of water on the desert had caused them to take the route along the foot of the mountains, and, fortunately for us, the first wagon that had ever passed this way came in time to give us relief. A bargain was immediately made — the Mexicans, who were on foot, agreeing to take Washburn to Saric, in Sonora, for five dollars. Making as comfortable a bed for the wounded man as was possible, over the rough load of ore, we began this new stage of our journey.

The mules made slow progress, rarely over ten or twelve miles a day, and now and then losing a day altogether; still it was a great relief to be again on horseback. At Poso-Verde we reached the border of the Papagoria. Here the Indians had taken advantage of the existence of a spring and abundant grass. The spring was a small pool, in which stood, during the heat of the day, all the cattle that could find room, and in it the Indians bathed every morning. Already from a distance we smelt the water, and when we reached it, it seemed more like a barnyard pool than a reservoir of drinkable water. Still we were forced to use it there, and to lay in a supply.

Leaving Poso-Verde we turned from the mountains onto a broad plain, bearing scarcely any other vegetation than scattered tufts of grass. As we were now exposed to the Apaches, we were obliged to keep a constant

lookout. The Mexicans had no ammunition, and ours was useless to them. In two or three days it was suddenly discovered that we were out of provisions and tobacco. A Mexican was sent ahead on our extra horse to get supplies at the nearest village in Sonora, and it was hoped he might meet us on the second or third day, at least in time to prevent any deaths from starvation.

But when the third day passed without his return, it was evident that hunger was telling fearfully on us. The Mexicans became, all of them, more or less deranged, as much from want of tobacco as from hunger. Fortunately there was a kind of cactus from which we could get a thirst-satisfying liquid and this removed the worst of dangers. We could make but little progress, as our companions wandered away from our course, and my time was divided between guiding the mules and keeping the men near the wagon. I was entirely ignorant of the route, and, not being able to rely on the random talk of the crazy guides, could only keep a southerly course, and trust to accident for finding water.

The Mexicans tore open my saddle-bags in search of tobacco, an action I had neither the strength nor the heart to resist. I began to feel that my own reason was leaving me.

Fortunately, before night overtook us we reached a low range of hills, and my heart beat fast as I saw a number of *petáihya* cacti growing from the rocks. It was the season for their fruit, and enough of it was found to supply a scanty meal all around.

The next day, fearing to go on, we remained quiet, and I stood guard till the following morning, to prevent the starving men from killing one of the mules, knowing well that it must inevitably cause the death of Washburn. Toward noon of the fifth day a horseman was seen com-

ing from the north, who proved to be our Mexican bringing provisions. He had passed us in the night, and had gone a long day's journey beyond us, before cutting our trail. Our deliverer was torn from his horse by the men, in their impatience to get at the supplies, but, before taking a mouthful of food, we all quickly rolled cigarettes, and each inhaled one long draught, and then fell to eating. Fortunately, the man had been wise enough to hide most of his load, to prevent the effects of overeating in our condition. By the next morning we were nearly recovered from the effects of starvation, as was shown by the returned sanity and straightened forms of all.

Two or three days more brought us to Saric, where the sympathies of the entire female population were immediately enlisted in behalf of Washburn, and we were soon furnished with as comfortable quarters as the poor frontier village could supply. This was not much, however, consisting of a room, in which we spread our blankets on some fresh cornstalks.

Here I found awaiting me the following letter from Poston:

Arivacca, 27 June, 1861.

My dear Sir:

I avail myself of a passenger to send you some late newspapers.

The Civil War in the States seems to have begun in earnest and we may hear of an important battle at Harpers Ferry or Washington by the next mail.

I have advices from Col. Colt that an agent will be here to relieve me in all the present month and I now look for him daily.

The Apaches have made two attacks at Fort Buchanan, each time carrying off the stock and killing two soldiers.

Bill Ake shot a neighbor on the Sonoita named Davis the

other day and some thirty regulators are after him sworn to take him dead or alive.

No other news of consequence.

The messenger waits.

Come up soon.

Yours truly,
Charles D. Poston.

The Apaches had made a raid on the place that day, and the village was in a state of excitement. An old Spaniard was found whom we both knew, and who, having some knowledge of surgery, proceeded to cut out the ball.

This was done successfully, the lead coming out in two pieces. The pure air of the desert, and careful treatment and constant nursing on the part of the kind-hearted Mexican women, finished the cure, and Washburn in less than two weeks was on the road to certain recovery, and I prepared to leave him, to return to Arizona. When on the point of starting I was seized with chills and fever, and for a week was the patient, in turn, of every woman, young and old, in the village. But kind nursing, aided by emetics and warm water by the pailful, and a very bitter bark — probably calisaya — restored me, and, leaving a country where the men were mostly cut-throats and the women angels, I rode toward Arizona.

CHAPTER XXIII

CLOSING SCENES AND ESCAPE

At Arivacca I found Colonel Poston impatiently awaiting the arrival of the agent of Colonel Colt, to whom he had transferred the lease of the Heintzelman mine. Being both of us anxious to leave the country, we determined on a journey together through the principal mining districts, to the City of Mexico, and thence to Acapulco or Vera Cruz. Before beginning this we visited Tubac, where we found the population considerably increased by Americans who had been driven in by the Apaches from the ranches of the Santa Cruz valley.

In three days we were ready to return to the Heintzelman mine, and the morning of the fourth day was fixed for our final departure from Tubac. But something occurred in the evening which interfered with our plans. Just before dark a Mexican herdsman galloped into the *plaza,* and soon threw the whole community into a state of intense excitement. He had gone that morning with William Rhodes, an American ranchero, to Rhodes's farm, to bring in some horses which had been left on the abandoned place. The farm lay about eighteen miles from Tubac, on the road to Tucson, and to reach it they passed first through the Reventon, a fortified ranch ten miles distant, and then through the *Canoa,* an abandoned stockade station of the Overland Mail, fourteen miles from Tubac. At this place they found two Americans cooking dinner; and telling them they would return in an

hour to dine, they rode on. Having found the horses, they returned, and, before riding up to the house, secured the loose animals in the *corral,* and then turned toward the stockade. Their attention was at once drawn to a garment drenched in blood hanging on the gate, and as they approached this a scene of destruction confronted them. The Apaches had evidently been at work during the short hour that had passed. Just as the white men were on the point of dismounting, they discovered a large party of Indians lying low on their animals among the bushes a few hundred yards off the road. Instantly Rhodes and the Mexican put spurs to their horses, to escape toward the Reventon, the Apaches broke cover, and reached the road about one hundred yards behind the fugitives.

There were not less than a hundred mounted warriors, and a large number on foot. About a mile from the stockade Rhodes's horse seemed to be giving out, and he struck off from the road toward the mountains, followed by all the mounted Indians. The Mexican had escaped to the Reventon, and thence to Tubac, but he said that Rhodes must have been killed soon after they parted company.

It being too late to do anything by going out that night, we determined to look up the bodies and bury them the following day. Early the next morning I rode out with Colonel Poston and three others to visit the *Canoa.*

When we came to the Reventon a Mexican was opening the gate. As I rode in for information a door opened, and Rhodes, smoking a long cigar, sauntered leisurely towards me, with his left arm in a sling.

"Hello, Rhodes," I said, "we've come to bury you."

"Well, you've come too soon," he answered, laughing.

He corroborated the story of the Mexican, and told

how he managed his remarkable escape. Finding his horse failing, and having an arrow through his left arm, he left the road, hoping to reach a thicket he remembered having seen. He had about two hundred yards' advantage over the nearest Indians, and as he passed the thicket he threw himself from the horse, which ran on while he entered the bush. The thicket was dense, with a very narrow entrance leading to a small *charco* or dry mud-hole in the center. Lying down in this he spread his revolver, cartridges and caps before him, broke off and drew out the arrow, and feeling the loss of blood, buried his wounded elbow in the earth. All this was the work of a minute, and before he had finished it the Indians had formed a cordon around his hiding place, and found the entrance. The steady aim of the old frontiersman brought down the first Apache who rushed into the narrow opening. Each succeeding brave as he tried the entrance met the same fate, till six shots had been fired from Rhodes's revolver, and then the Indians, believing the weapon empty, charged bodily with a loud yell. But the cool ranger had loaded after each shot, and a seventh ball brought down the foremost of the attacking party. Rhodes dropped thirteen Indians. During all this time the enemy fired volley after volley of balls and arrows into the thicket. Then the Indians, who knew Rhodes well by name, and from many former fights, called out in Spanish: "*Don Guigelmo! Don Guigelmo!* Come out and join us. You're a brave man, and we'll make you a chief," "Oh, you —, you! I know what you'll do with me if you get me," he answered. After this Rhodes heard a loud shout: "Sopori! Sopori!"— the name of the ranch of a neighboring mine — and the whole attacking party galloped away.

Leaving the Reventon, we rode toward the *Canoa*. As

THE APACHES IN PURSUIT OF RHODES.

we neared it the tracks of a large drove of horses and cattle, and of many Indians, crossed the road. Soon we came in sight of the station, and two dogs came running toward us. With low, incessant whining they repeatedly came up to us, and then turned toward the entrance, as if beseeching our attention to something there. When we entered the gate a scene of destruction indeed met us. The sides of the house were broken in, and the court was filled with broken tables and doors, while fragments of crockery and ironware lay mixed in heaps with grain and the contents of mattresses. Through the open door of a small house, on one side of the court, we saw a naked body, which proved to be the remains of young Tarbox, who had come from Maine a short time before. As in the case of many of the settlers, the first Apaches he had seen were his murderers. Under a tree, beyond a fence that divided the court, we found the bodies of the other American and a Papago Indian, who, probably driven in by the Apaches, had joined in the desperate struggle that had evidently taken place. These bodies were pierced by hundreds of lance wounds.

Our small party of five took turns in keeping watch and digging the graves. Burying in one grave the two who had fought together, we wrote on a board: "White man, unknown, and a Papago killed by Apaches." Over the other grave we wrote: "Tarbox."

We had just finished the burial when a party of Americans, escorting two wagons, rode in sight. They were on their way to Fort Buchanan, where they hoped to discover the *caches* in which commissary stores had been hidden on the abandonment of the country. Happening to ask them whether Mr. Richmond Jones, superintendent of the Sopori Company's property, was still in Tucson, I was

told that he had left that town for the Sopori early on the previous day.

It seemed that Jones might have reached the *Canoa* in time to be in danger from the Indians, so we began a search for his body in the neighborhood, and before long a call from one of our number brought us to the spot where it lay. A bullet entering the breast, two large lances piercing the body from side to side, and a pitch-fork driven as far as the very forking of the prongs into the back, told the manner of his death. Wrapping the body in a blanket, we laid it in one of the wagons and turned toward Tubac. Finding the spot where Rhodes had left the road in his flight from the Indians, Poston and I followed the tracks till we reached the scene of his desperate fight. The place was exactly as Rhodes had described it, and the *charco* was covered with branches cut loose by the Apache bullets, while the ground at the entrance was still soaked with blood.

At Tubac we buried Jones. His home had been in Providence, R. I. Like Grosvenor, a true friend of the Indians, he fell by them a victim to vengeance for the treachery of the white man. The cry of Sopori, raised when the Indians left Rhodes, was now explained. They knew that in Jones they had killed the superintendent of that ranch, and they were impatient to reach the place and drive off its large drove of horses and cattle before the arrival of any force large enough to resist them. This they effected by killing the herdsmen.

The next morning, bidding good-by to Tubac, Poston and I returned to the Heintzelman mine. I was to pass a week there, for the purpose of examining and reporting on the property; but hearing that a wagonload of water-melons had arrived at Arivacca, and having lived on only

jerked beef and beans for nearly a year, I determined to go on with Poston and pass a day at the reduction works. It was arranged that two of the Americans should come from Arivacca the next morning for letters. But the letters not being ready, their departure was postponed till the following morning. About an hour and a half after these two men had left Arivacca they galloped back, showing in their faces that something awful had happened.

"What is the matter?" asked Poston.

"There has been an accident at the mine, sir."

"Nothing serious, I hope?"

"Well! Yes, it's very serious."

"Is any one injured — is my brother hurt?"

"Yes, they're all hurt; and I am afraid your brother won't recover."

My friend dared to put no more questions. The men told me the whole story in two words — "all killed."

Mounting my horse, which had already been saddled to carry me to the mine, I returned quickly with the two men. We found the bodies of Mr. John Poston and the two German employees, while the absence of the Mexicans showed plainly who were the murderers. I heard the history of the affair afterward in Sonora. A party of seven Mexicans had come from Sonora for the purpose of inciting the *peons* at Arivacca and the mine to kill the Americans and rob the two places. They reached Arivacca the same day that Poston and I arrived, and, finding the white force there too strong, had gone on to the mine. Here they found no difficulty in gaining over the entire Mexican force, including a favorite servant of Mr. Poston. This boy, acting as a spy, gave notice to the Mexicans when the white men were taking their *siestas*. Without giving their victims a chance to resist

they murdered them in cold blood, robbed the place, and left for Sonora.

They had stabbed Poston's brother and one of the Germans as they were sleeping in different rooms.

The other German, who had been our cook at the Santa Rita, and had stood bravely by us to the end, lay rolled up in blankets for protection from bullets fired through the window.

Laying the bodies in a wagon just arrived from Arivacca, we returned to that place. I found that during my absence the *peons* had attempted the same thing at the reduction works, but being detected in time by the negro cook they were put down. That evening we had another burial, the saddest of all, for we committed to the earth of that accursed country the remains not only of a friend but of the brother of one of our party.

I will add here that the accident which so nearly proved fatal to Washburn on the desert in all probability saved his life, since by delaying his return to the Heintzelman mine, where he made his home, it saved him from the general assassination.

CHAPTER XXIV

PURSUED BY DESPERADOES

AFTER the tragic event related in the preceding chapter, Colonel Poston and I abandoned our proposed journey, and determined to leave the country by the nearest open route. The events of the past week, added to all that had gone before, began to tell on my nerves, and I felt unequal to the task of making a dangerous summer journey of over one thousand miles through Mexico.

I was repeatedly urged by the officers at Fort Buchanan to go East with the regiment as the only way of escaping.

However, the arrival of a Spaniard whom we knew well decided our route. He brought the news that a vessel was to arrive at Lobos Bay, on the Gulf of California, to take in a cargo of copper ore. So we determined to leave with him for Caborca, on our way to Lobos Bay. Indeed, the only route open to us lay through Sonora, as it was out of the question for two men to think of taking the ordinary routes through Arizona.

The day after the funeral we put our baggage into the returning wagons of the Spaniard, and following these, on horseback, left Arivacca. Our own party consisted of Poston, myself, and the colored cook. Crossing the Baboquiveri plain we passed around the southern end of the Baboquiveri range. Here I entered again upon the great steppe, which, stretching northward through the Papagoria, and southwestward to the Altar River, had so lately been the scene of our eventful journey. On the skirt of this plain we encamped for the night.

The effect of the grand scenery and wonderfully clear atmosphere of this strange land is to intensify the feelings of pain or pleasure which at the time sway the traveler's mind. Thus, while under ordinary circumstances the surroundings of this our first encampment would have been engraved on the memory with all the shading and coloring of a sublime and beautiful night scene, the events of the past week formed a background on which the picture of that night remains impressed with all the unearthly gloom of an inferno. Above us the sky was clear. Then a densely black cloud hid the mountain and a storm burst. The heavens resounded with the crash of thunder. Forked columns of lightning pierced the darkness revealing the weird rock forms and frowning cliffs of the Arizona Mountains. Then all changed quickly; the clouds vanished and again the stars shone in the silent night. I felt that I had left the gate of hell, that in that half-hour, in that cloud, there had been at work all the evil spirits that had controlled the minds of men in the land I was leaving.

Our route lay for two or three days, as far as the Altar River, over hard gravelly plains, generally bearing grass and scattered *mesquite* trees and cacti. The Altar River was a mere rivulet at nearly all seasons, but along its course were many places which might become flourishing ranches, were not all attempts at industry rendered hopeless by the raids of the Apache. Following the river we reached Altar, a village built of adobes, containing a population of about 1,900 souls, including the ranches of the immediate neighborhood. A solitary date palm was evidence of an attempt of the early missionaries to introduce fruits adapted to the climate.

On the fourth day of our journey we reached Caborca, a village containing about 800 inhabitants. It was in the

fine old mission church at this place that the filibustering party under Crabbe met their fate.

Here we were welcomed by an acquaintance, Don Marino Molino, who offered us the hospitality of his house. Much to our disappointment we learned that the coming of the expected vessel to Lobos Bay had been postponed for several months, and it became necessary to choose another way out of the country. Our choice of routes was limited to two: the one leading to Guaymas, about 200 miles distant, and the other to Fort Yuma, nearly as far to the northwest, on the Colorado River.

While we were in Caborca some of the former *peons* of the Heintzelman mine, who had been of the assassinating party, were seen walking in conscious security through the streets. We heard that they not only boasted openly of their part in the murder, but that they had formed a party of twelve desperadoes to follow and waylay Poston and myself, for the sake of the large quantity of silver we were supposed to have in our baggage. Our friends warned us of the danger, and advised us to increase our force before continuing the journey. At the same time a report was brought in by a Mexican coming from California that Fort Yuma was to have been already abandoned, and that owing to two successive rainless seasons many of the usual watering places on the desert route to the Colorado were dry. There was one distance, he said, of 120 miles without water, and on this some of the party to which he belonged had died from thirst.

We decided, however, on this route, as, besides leading directly to California, it exposed us mainly to the dangers of the desert and not of Indians. One thing caused us much uneasiness: this was the question as to how we should cross the Colorado River, supposing the fort were

really abandoned. That river is deep and broad, and the current rapid; and the abandonment of the fort would, considering the hostile character of the Yuma Indians, necessarily cause the abandonment of the ferry also.

There was in Caborca an American, named Williams, who had been found some weeks before, dying from hunger and thirst, on the shore at Lobos Bay. Brought into Caborca, and kindly treated by an old lady of that place, he had already recovered, and was seeking an opportunity to leave the country. According to Williams's story, he had formed one of a party of three who had built a boat on the Colorado River, intending to coast along the Gulf of California to Cedros Island, on a "prospecting" expedition for supposed hidden treasure. Arriving at Lobos Bay, he said, they had been wrecked; but he was unable to account for the subsequent movements of his companions. We believed his story, and, liking the appearance of the man, engaged him to go with us to California, giving him as compensation an outfit consisting of a horse, saddle, rifle, and revolver. As soon as we had engaged a Mexican, with several pack-mules, we were ready for our journey. Our party now consisted of four well-armed men, not counting the Mexican muleteer.

Several friends escorted us as far as our first encampment, which we reached in the night, and left us the following morning, but not without repeatedly warning us to keep an unceasing watch for the party that was sure to follow us.

The first inhabited place we passed was the Coyote gold placer, near which are the ancient Sales and Tajitos gold and silver mines, and, in the neighboring Vasura Mountains, the Coyote copper mine.

The next settlement in which we encamped was Quit-

ovac, a place which had some celebrity for its gold placers before the discovery of that metal in California. It had been our intention to take the route to the Colorado River, leading through the Sonoita gold district, in preference to passing through San Domingo. These routes, diverging at a point a few miles beyond Quitovac, continue parallel to each other, but separated by mountains, till their reunion on the Gila River. When asked at Quitovac which route we proposed taking, we had given that by Sonoita as our choice. But as soon as we took the road in the morning it became evident that a party of horsemen had passed through Quitovac during the night, stopping for only a short time. The tracks showed them to be twelve in number, and when on reaching the fork of the trails we found that, after evident hesitation, they had taken the Sonoita route, we changed our plan and turned into that leading to San Domingo, which place we reached in a few hours. In this settlement, containing two or three houses, the last habitations before reaching the Gila River, we found Don Remigo Rivera, a revolutionary Sonoranian general. Don Remigo had withdrawn with his small force to the United States boundary, where he was awaiting a favorable oportunity for action. Leaving his men at Sonoita, he had come to pass a few days at San Domingo. As this gentleman had frequently been a guest at the Santa Rita, and at Colonel Poston's house, we received from him a cordial reception, and dismounted to breakfast on *pinole* and watermelons. While thus engaged a courier rode up at full speed, and was closeted for a few minutes with our host. This man, Don Remigo informed us, brought news of the arrival, in the neighborhood of Sonoita, of twelve men, whose names he gave. It was supposed by his friends that they had come to assassinate the general.

"That is not likely to be their object," said Don Remigo, "since though they are cut-throats, they belong to my party, and have served under me. It is more probable," he continued, "that they are following you, as I have heard of a plot to waylay you."

Our suspicions of the morning were thus confirmed, and the necessity of being prepared for an attack became more apparent.

CHAPTER XXV

THROUGH DESERT PERILS

SAN DOMINGO lies on the boundary, and the trail leaving the ranch keeps for a few miles south of the line, and then enters the United States territory. To this point Don Remigo accompanied us, to show us the last watering place before entering upon the desert. As we returned from this spring to the road two men were seen, who, having passed us unnoticed, were traveling north. They proved to be two Americans, on their way to Fort Yuma, and they readily joined us. Our party now numbered six well-armed men, and we felt ourselves able to cope with fifty Mexicans. The size of our force now rendered it possible to keep a watch without much fatigue to any member of the party; but our greatest danger lay in the exposure of our animals, and consequently of ourselves, to death from thirst. Soon we would have to enter upon the broad, waterless region, and the bones of animals already bordering our trail warned us of the sufferings of past years.

One night, as we were skirting the desert along the base of a barren *sierra*, Williams and I had fallen behind the caravan, when my companion, from overuse of our Spanish brandy, began to talk freely to himself. We were just approaching a bold, high spur of the *sierra*, while immediately before us the trail wound between immense fragments of rock fallen from the mountains

above. Williams stopped his horse, and looking at the rocks, said, half-aloud:

"Here's where the d—— d greasers overtook us, and we whipped them."

As the man had said that he had never been over the road before, I thought it at first only the talk of a drunken man.

"I thought you had never been this way before, Williams," I said to him.

"Maybe I haven't; maybe I dreamt it; but when you get by that spur you'll see two peaks on the top of the *sierra*. Them's the 'two sisters.'"

We soon passed the point of the spur, when, looking toward the top of the mountain, I saw two tall rocks rising from the crest. My interest in this man was now excited, indeed I had already had a suspicion that he was not what we had taken him to be. Determined to learn more, I passed him my flask. We rode on together talking about Sonora, though not very coherently on Williams's part. After riding a few miles we came near some thickets of *mesquite* and *palo-verde* trees, and I observed that my companion had become attentive to the surroundings. In answer to my questions he replied:

"I'm looking for an opening on the left side of the trail. There's a square opening with a big *mesquite* at each corner, and a long branch goes from one corner across to the other. Under the branch there's a mound, I guess."

He rode ahead, and soon turned out of the trail.

Following him, I entered by a narrow path and found myself with him in a square opening as he described. The clear moonlight shone into the spot and cast our shadows over the mound.

"He's rotten now I reckon," my companion muttered.

"I told him I'd spit more than once on his grave and by G — d I've done it."

"What was his name, Williams?" I asked, passing the flask again.

"Charley Johnson."

"What did you kill the poor devil for, in this out-of-the-way place?"

"An old grudge, about a Mexican woman, when we were with Fremont. I told him I'd spit on his grave, and now I've done it. We had a split here about a scarf — and I got the scarf, that's all."

"Who kept the priest's robes?" I asked, looking him full in the face.

At these words Williams started, and made a motion toward his pistol; but seeing that I had the advantage, inasmuch as my hand rested on my revolver, he simply exclaimed:

"What the hell do *you* know about the priest's robes?"

"Only that you were one of Bell's band," I answered quietly.

The suspicions I had formed as soon as Williams had betrayed a knowledge of the route were fully confirmed. Our quiet-looking companion had been one of the band of cut-throats which, under the notorious Bell, had been the terror of California soon after the discovery of gold. This party had gone to Sonora, about eight years before the time of our journey, under the pretext of wishing to buy horses. Stopping at a celebrated gold placer near Caborca, they were hospitably entertained at the neighboring mission by the old priest and his sister, who were living alone. In return for this kind reception they had hanged the priest, outraged the lady, and robbed the rich church of several thousand dollars in gold. The inhabitants of Caborca had told me of this occurrence, still

fresh in their minds, and of the bravado of the party in riding through Caborca using the priestly robes as saddle blankets. Before a sufficiently strong party could be raised to follow them they had escaped to the desert, and, when finally overtaken, were found too strong for their pursuers, who were driven back.

My experience on the border with men of the class to which Williams belonged had shown me that to manage them, or, when it became necessary, to associate with them, one must assume, to a certain extent, their tone. This I had done with my companion, and by this means and the aid of the brandy flask I obtained his confidence. He acknowledged that he had been one of Bell's men, and had been in the expedition into Sonora. When he was recently brought into Caborca nearly dead he was taken care of by the sister of the priest whom they had hanged, and Williams lived in constant fear that the lady would recognize him. Not only had he escaped recognition, but he told me, as an excellent joke, that the Señora had given him a letter to give to her two daughters, who were living in California.

He was, at the time of our journey, a refugee from California, having murdered a man in San Francisco. The history he gave me of his life while with Bell's band was a combination of awful crimes and ludicrous incidents that would swell a volume. I never knew but one ruffian who more surely deserved hanging than this companion whom we had taken with us to increase our safety. The other man was Rogers, whose story I have written in previous pages.

I thought best to warn only Poston about Williams, but when Williams stood guard at night I slept lightly. Indeed, the events of the past three months had caused me to awaken at the slightest sound. I lay always with my

revolver in my hand. A sound made me cock it instantly. It happened once that in awaking I realized that I had been sleeping with my finger on the trigger of a cocked pistol. Such perfect guard had been kept by the subconscious action of the brain.

In a few days we approached the worst part of the desert; the watering places became more separated and the supply smaller. Our route lay over broad, gravelly plains, bearing only cacti, with here and there the leafless *palo-verde* trees, the horrid *cholla,* and the rarely-failing greasewood bush. In the distance, on either side, arose high granite mountains, to which the eye turns in vain for relief. They were barren and dazzling masses of rock. Night brought only parching winds, while during the day we sought often in vain for shelter from the fierce sun-rays.

On leaving the Santa Rita mines I had brought away, as mementos of Grosvenor, the miner's compass and the chemical thermometer that he had treasured in memory of his friend, Bronkow, murdered at the San Pedro mine. This thermometer was a glass rod about one-quarter of an inch thick and fifteen inches long, having no case nor any kind of protection. I kept it under my saddle-pillow at night, and carried it, by day, rolled up in my blanket tied behind the saddle. Every night and every morning I was surprised to find it whole, and it remained so till we reached San Francisco, when I had a tin case made for it. I have it still after carrying it through all the exposures of a very rough life around the world, though in a tin tube after leaving San Francisco.

This thermometer showed that the temperature throughout the desert journey ranged between 120° and 130° F. in the shade day and night. The only shade we had by day was when we found wind-hollowed holes in

the face of a rock. So intense was the heat that to touch the black barrel of a gun, exposed to the direct rays of the sun, meant a blistered hand.

On these vast deserts the sluggish rattlesnake meets the traveler at every turn. The most powerful inhabitant, his sway is undisputed by the scorpions and the lizards on which he feeds. One night we folded our blankets and lay naked on them with our saddles for pillows. Poston lay about two feet from me. We were talking when I moved slightly. A rattle sounded between us. We rolled away in opposite directions, jumped to our feet, and seized the still burning brands from the dying fire that had made our coffee.

A "horned" rattlesnake was just disappearing into a hole under my saddle. We caught his tail in time to break his back, which made him harmless.

The routes over these wastes were in places marked by mummified cattle, horses, and sheep.

With a feeling of much anxiety we encamped on the border of a *playa,* a depressed region covered with water after cloudbursts. We found a surface of dried mud crossed by ridges of shifting sand. From that camp on there lay before us a continuous ride of nearly thirty hours, before we could hope to find the nearest water on the Gila River, and it was not probable that our animals could bear up under the fatigue and thirst added to that they were already suffering from.

But during the night a dense cloud covered the neighboring mountains and there came a cloudburst, the first rain that had fallen on this desert for more than two years. Never was a storm more welcome. Both we and our animals enjoyed heartily the drenching. Before daybreak the sky cleared, and with the rising sun began the heat of another day. A broad sheet of water, only a few

inches deep, covered the *playa* for miles before us, and banished from our minds all fear of suffering.

On the second day after the rain the water had almost everywhere disappeared, having been evaporated by the heat and dryness of the air. We were now approaching the *Tinaja Alta,* the only spot where, for a distance of nearly 120 miles, water might at times be found.

It was a brilliantly moonlit night. On our left rose a lofty *sierra,* its fantastic sculpturing weird even in the moonlight. Suddenly we saw strange forms indefinable in the distance. As we came nearer our horses became uneasy, and we saw before us animals standing on each side of, and facing, the trail. It was a long avenue between rows of mummified cattle, horses, and sheep.

Nothing could be more weird. The pack animals bolted, and Poston and I rode through with difficulty.

Ten or twelve years before, during the time when meat was worth in California almost its weight in gold dust, it paid to take the risk of losing on this desert nearly all of a herd if a few might survive.

If no water was found at the *Tinaja Alta* most or all of the animals and some of the men were sure to die.

In the intensely dry and pure air there was no decomposition; all the dead simply became mummies.

This weird avenue had been made by some travelers with a sense of humor, and with a fertile imagination which had not been deadened by thirst.

Our next camp was made at the *Tinaja Alta* or high tanks. Here, in a steep ravine in the mountains, there is a series of five or six large pot holes, one above the other, gouged in the granite bed of the gorge. This gorge was apparently the outlet onto the desert of a system of drainage of the *sierra.* It had been carved either by erosion in a long past period of a different climate, or by oc-

casional cloud-bursts happening through scores of millenniums. After a rain these holes are all filled, but as the season advances the lower ones become empty, and the traveler is obliged to climb to the higher tanks and bail water into the one below him, and from this into the next, and so on until there is enough in the lowest to quench the thirst of his animals. The higher tanks are accessible only at risk of life. After a succession of dry seasons it sometimes happened that travelers arrived here already dying from thirst. Finding no water in the lower holes, they climbed in vain to the higher ones, where, perhaps, exhausted, they fell from the narrow ledge, and the tanks, in which they sought life became their graves.

Here I found a large pair of horns of the Rocky Mountain sheep, or "big-horn," that had doubtless strayed too far from the usual watering place.

A forced ride of a day from the *Tinaja Alta* brought us to the Gila River, at one of the stations of the abandoned overland stage route. Here a piece cut from a newspaper, and fastened to the door of the house, first informed us of the defeat of the North at Bull Run. Almost the last news we had received before this from the East was of the firing on Fort Sumter.

Our route now lay along the Gila River. Stopping in the afternoon, we sought relief from the heat by taking a bath in the stream; but the water which we had found pleasant in the morning was now unpleasantly warm, and on trying it with the themometer the mercury sank from 117 degrees in the air to only 100 degrees in the water, which was thus two degrees above blood-heat.

During the night we were traveling by the bright light of the full moon when, looking south, I saw a black wall rising like a mountain of darkness, and rapidly hiding the sky as it moved toward us. In a few minutes we

were in intense obscurity, and in the heart of a sandstorm which rendered all progress impossible. Dismounting, we held the terrified animals by the lassos, and sat down with our backs to the wind. We had repeatedly to rise to prevent being buried altogether by the deluge of sand. When the storm was over the moon had set. This obliged us to unload our half-buried animals and camp for the night.

The next morning we reached Colorado City, opposite Fort Yuma on the Colorado River. This place, consisting of one house, had a curious origin, which was told me by Poston, who was also the founder. Soon after the purchase of Arizona my friend had organized a party and explored the new region. Wishing to raise capital in California to work a valuable mine, he was returning thither with his party when they reached the Colorado River at this point. The ferry belonged to a German named Jaeger, whose fare for the party would have amounted to a considerable sum. Having no money, they encamped near the ferry to hold a council over this unexpected turn of affairs, when my friend, with the ready wit of an explorer, hit upon the expedient of paying the ferriage in city lots. Setting Ehrenberg, the engineer of the party, and under him the whole force, at work with the instruments, amid a great display of signal stakes, they soon had the city laid out in squares and streets, and represented in due form on a sketch, not forgetting water lots and a steam ferry. Meanwhile Jaeger sat smoking his pipe in front of his cabin on the opposite shore, and, watching the unusual proceeding, his curiosity led him to cross the river. He began to question the busy surveyors, by whom he was referred to my friend. On learning from that gentleman that a city was being founded so near to his own land the German became interested, and, as

the great future of the place was unfolded in glowing terms, and the necessity of a steam ferry for the increasing trade dwelt upon as well as the coming of a transcontinental railway, he became enthusiastic, and began negotiations for several lots. The result was the sale of a small part of the embryo city, and the transportation of the whole party over in part payment for one lot. I must do my friend the justice to say that he afterward did all that could be done to forward the growth of the place.

"How about the city?" I asked Poston.

"There it is; we'll breakfast in it," he answered, pointing to the miserable house.

And we did; and in breakfasting, with the exception of the proprietress, our party formed the entire population of a city eight years old.

Our landlady, known as the "Great Western," no longer young, was a character of a varied past. She had followed our army throughout the war of 1848 with Mexico. She was adored by the soldiers for her bravery in the field and for her unceasing kindness in nursing the sick and wounded.

Having heard her history from Poston, I looked with interest on this woman as, with quiet native dignity, she served our simple meal. She was a lesson in the complexity of human nature.

We crossed the river and made our quarters at the ferry house. Our party separated, the colored cook going, with the muleteer, back to his Mexican wife in Sonora. The two Americans who had joined us on the road lived near the fort. With their departure our number was reduced to three.

During our stay of several days we saw a good deal of the Yuma Indians, a tribe which, till within a few years,

was celebrated both for its fierceness and for the beauty of its women. But this quality was already causing the destruction of the tribe, and while we were there we saw the funeral ceremonies of the last of the dark beauties. Unlike most of the Indians, the Yumas burned their dead. In this instance a pile of wood about eight feet long, and four or five feet wide, left hollow in the center to receive the body, formed the funeral pile. The body, wrapt in the clothing worn in life and borne by relations, was placed in the pile, which was then lighted. As the flames increased friends approached the spot, with low and mournful wailing, to feed the fire with some article of dress or ornament. One after another the young Yuma women were disappearing, victims to disease brought by the troops, and which, it seems, the military physicians did little to prevent the spread of.

Both the men and women of this tribe were large and well built. The women wore a short skirt made of strings of bark, fastened to a girdle around the waist, and reaching to above the knees. The most important weapon of the warriors was a short club.

CHAPTER XXVI

A PLOT DISCOVERED IN TIME. JOURNEY TO CALIFORNIA

AFTER resting a few days we made preparations to continue our journey to California. An emigrant who, with his wife, had been forced by the secessionists to leave Texas agreed to carry our baggage in his wagon. He left the ferry in the morning, while we were to start in the evening, and overtake him at the first encampment on the desert. During the day there arrived a man whom I knew to be a notorious cut-throat. This fellow, a tall one-eyed villain, who was known as "one-eyed Jack," I knew must have just come from Arizona. He wore trousers of which one leg was white and the other brown. It was soon evident that the new arrival and Williams were old cronies, and they passed most of the day together. Before we left in the evening I asked Williams the name of his friend, and received for answer that he was called Jack, that he had just come from California, and was going to Arizona.

We left the ferry about dusk, but before we had gone half a mile Williams turned back, saying he had left something and would overtake us. Our route lay for several miles along the west side of the Colorado, and Poston and I rode to the point where the road leaves the river to turn westward. Here we descended the bank to water the horses, and, dismounting, waited nearly an hour for our missing companion. We finally started without him, and, leaving the river, began to cross the wooded bottom-

land toward the desert. We had ridden a short distance when a bush, freshly fallen across the road, seemed to be a warning that the route was impracticable further on. Poston remained by the signal, while I looked in vain for another way through the underbrush; it was evident that the bush had been cut since the passage of the wagon that morning. I had started through the open wood to strike the road some distance beyond when my attention was drawn, by my horse's uneasiness, to a mule tied in the woods, and to a man stretched out on the ground. At a glance I saw from a distance, by the different colored legs of the man's trousers, that "one-eyed Jack" was near me. Without stopping I went to the road, and, following this back, came upon Williams's horse fastened to a tree, and near him his owner apparently asleep. On being asked what the bush meant, he replied that he had put it there that we might not pass him while he slept; that was the last place where we would find grass he said, and, as there would be no water for thirty miles, we must camp there for the night. In the meantime Poston rode up. The truth had already entered my mind. But dismounting, while I pretended to unbuckle my saddle-girth, I asked Williams where he had been.

"I went back to the river for my canteen."

This I knew was a lie, for I had seen him drink from it as we left the ferry.

"When is your one-eyed friend going to Arizona?" I asked.

"He's gone already; I saw him across the river," was the cool reply.

The villain's coolness was admirable, but the whole plot was clear. Jumping into the saddle, and making a sign to Poston, I declared my intention of riding on to the emigrant's camp. As Williams swore he would go

no further that night, we left him and soon entered the desert. We both decided that Williams and his friend had conspired to kill us while we slept, and then to murder the emigrant and his wife, and get possession of the silver which had attracted the Mexican bandits.

Leaving the woods, which form a narrow strip along the Colorado, we passed a belt of shifting sand several miles broad, which is gradually approaching the river and burying the trees.

We reached the camp of the emigrant at about 3 A. M., and, entering the abandoned station of the Overland Stage Company, slept soundly till roused by the noise of the preparation for breakfast. After we had eaten and begun to saddle our animals Williams rode up, and, entering the house, rather roughly told the wife of the emigrant to make him a breakfast. Some sharp words passed between us, and Wiliams left the house with an oath and a muttered threat. Poston beckoned to me, and we went out. Our companion stood a few yards from the door, with his back toward us, and did not notice our approach. Poston, drawing his revolver, called Williams by name. Taken by surprise he whirled around, and, catching sight of the revolver, made a motion toward his own, but he was too old a hand to draw a pistol against one already pointed at him.

"Williams," continued Poston, in the coolest tone, "Pumpelly and I have concluded that it wouldn't be safe for you to go to California. The last man you killed hasn't been dead long enough, and they have a way there of hanging men like you. We don't want to shoot you, for we haven't time to bury you. You may keep the outfit, but you had better go back and join your friend, "one-eyed Jack," down there by the river. You and he can't kill us, and you can't get our silver."

With a laugh Williams held out his hand.

"Give us your hand; you're a d—— d sight sharper than I thought you was; so long!" and jumping into the saddle, he rode away by the road he had come. We watched him as he went, and could not help laughing at the fellow's cool impudence. I have given this scene in full as an illustration of the character of a representative of one type of the frontier ruffian.

The desert we were now crossing begins in Lower California, and stretches several hundred miles northward, with a width of 200 miles, between the Sierra Nevada and the Colorado River. Portions of this great area are depressed below the level of the sea. Where we crossed it, partly in Lower California, it was the worst of deserts. Its center, along our route, was a broad plain of fine sandy clay, strewn with fresh-water shells, and appeared to be the dry bed of a lake, which was once supplied from the Colorado River. Away from this plain the surface was covered with ridges of shifting sand. The wells dug by the Overland Stage Company yielded a sulphurous and alkaline water, so fetid as to be undrinkable, excepting when the traveler was driven to it by fear of death from thirst. Indeed, it often induces a disease which sometimes proves fatal.

On no desert have I seen the mirage so beautiful as here.

Nearly forty years later the Colorado River cut its way into the depression and formed the broad Salton Lake.

Riding one night we saw before us a camp-fire, by which we found an American and one Mexican. As meeting a traveler on a desert is always an event, we dismounted and smoked while the others were eating. The American was on his way to Sonora, and the Mexican

was his guide. We told him how dangerous it then was to travel through the intermediate country, and in Sonora.

"Well, I guess I'm pretty much proof against bullets and arrows, stranger; just feel here," he replied, putting his hand on his breast.

We felt his leather shirt, and found it double, and lined all round with disks of something heavy.

"Those are all twenty-dollar gold pieces. I'm pretty much proof," he continued. It was useless to give further warning to a man who published the fact that he was encased in gold, so we left him to his fate. We heard afterward, all the way to Los Angeles, that he had everywhere boasted of his golden armor; and, later still, that he had been murdered by his guide.

Finally, in the beginning of September, we approached the western edge of the Colorado desert. Traveling by moonlight, we entered the valley of Carisso creek, by which the desert sends an arm, like an estuary, into the mountains which limit it. As though fearful that the traveler may forget the horrors of a thousand miles of journey over its awful wastes, the desert, as a last farewell, unfolds in this dismal recess a scene never to be forgotten. Already from the plain, through the clear moonlight, we saw the lofty range bordering the waste, a barren wilderness of dark rock rising high above the gray terraces of sand that fringe its base, great towering domes and lowering cliffs rent to the bottom and clasping deep abysses of darkness.

All night long we forced our way through the deep sand of the gorge. Passing skeletons of animals glittering in the moonlight, scorched by hot blasts ever rushing up from the desert behind us, we seemed wandering through the valley of the shadow of death.

The next day we reached the summit of mountains near

the coast, and felt the breeze from the ocean. In an instant both horse and rider raised their drooping heads, and, quickened as with a new life, dropped the accumulated languor of the long journey.

As we descended the western declivity of the mountains we came upon a field of big watermelons. Think of it — watermelons galore, after months of desert thirst! There were herds of cattle and magnificent live-oaks. It seemed impossible that the cheerful land we were traversing should be a frame to the scene of desolation we had left the day before.

Our route to Los Angeles lay through the stock ranches which formed, with the vineyards, the principal industrial feature of the southern part of California. Almost the entire population consisted of emigrants from the Southern states, and so strong was the hatred felt toward the North, since the news of the rebel victories, that a Northerner was as unwelcome as he would have been in the worst parts of the South.

With our arrival at Los Angeles, which was then a village of adobe houses, ended our journey on horseback. A coasting steamer took us to San Francisco. Colonel Poston returned by the isthmus to the Eastern states, and I passed two or three months in visiting some of the principal mining districts, preparatory to resuming the practice of my profession. These excursions were made in company with my fellow student at Freiberg, James D. Hague.

In leaving the Santa Rita mines I took as a memento a bar of twenty-eight ounces of the last silver I had refined. This was all that I ever received in lieu of the $1,500 salary under my contract.

It was some time before my parents could learn that I was alive, and I could receive the money they sent me.

CHAPTER XXVII

I ENTER THE JAPANESE SERVICE

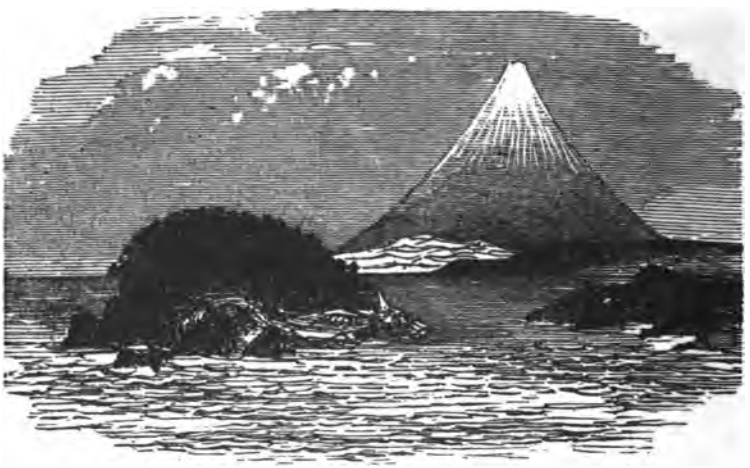
SHORTLY before my arrival in San Francisco the Japanese Government had instructed Mr. C. W. Brooks, their commercial agent, to engage two geologists and mining engineers for exploring a part of the Japanese Empire. Through a misunderstanding a copy of the correspondence, which passed through our Minister at Yeddo, having been sent to Washington, our own Government proceeded to make the appointments. By a pure coincidence I was chosen as one of the two men, both at Washington and at San Francisco, my colleague appointed from the first place being Dr. J. P. Kimball and from the latter Mr. W. P. Blake.

On the 23d of November, 1861, Mr. Blake and I went aboard the clipper-ship *Carrington,* which was bound to Yokohama by way of Honolulu.

At midnight the friends who had come to see us off left the ship. With the hoisting of the anchor we cut loose from the New World, and, drifting through the Golden Gate, began the long voyage over the great ocean, a voyage broken only by a delightful visit of two days at Honolulu.

On the evening of the 18th of February, the ninety-second day from San Francisco, the cry of "land" brought us all on deck. A cone so regular in shape as to leave no doubt of its being Fujiyama was visible near the setting sun — the first glimpse we had caught of Asia and the Japanese Empire.

Many Japanese fishing boats were visible and the next morning found us off the entrance to the Bay of Yeddo. Fujiyama was very distinct, its elegant cone wholly mantled with snow, and rising high into the air above the intervening wooded hills. This beautiful volcano,



FUJIYAMA AND INASIMA.
From a Japanese sketch.

rising 12,400 feet above the sea, is perhaps the first object associated with Japan in the minds of all who have seen the decorated wares of that country. It was therefore fitting that this only familiar object, like a solitary friend, should welcome us as strangers to a land where all else was new.

Soon we passed the long tongue of land known as Treaty Point, and the Bay of Yeddo opened before us so large that, in the northeast, no land was visible. Here Mr. Benson, U. S. Consul, and Mr. Brower, agent of

Messrs. Olyphant & Co., came on board and invited Mr. Blake and me to make our stay at their house.

The scene which met us on landing, and through which we walked to Mr. Brower's house, was no less novel than busy. At the head of the quay we passed a long, low building with black walls and paper windows. This was the custom house, and a large number of men, each bearing two swords and shuffling in sandals in and out at the doors, were the officials of this service. The broad streets, leading through the foreign quarters, were crowded with Japanese porters, bearing merchandise to and from the quay, each pair with their burden between them on a pole, and marking time independently of the others, with a loud, monotonous cry — *Whang hai! Whang hai!*

We immediately reported ourselves by letters to the governor of Kanagawa; and receiving an answer that he would communicate with the Government at Yeddo, we settled down to await orders.

Nearly a month had passed after our arrival in Japan before we heard directly from the Government. Mr. Harris had written to us that they were for some reason opposed to our visiting Yeddo. We found it impossible to account for the delay in assigning to us our duties, the more so that they were, from the time of our departure from America, paying at the rate of a viceroy's salary.

It seems that an unforeseen trouble had arisen in the minds of the authorities concerning the social position we were to occupy. In a country where rank, from the god-Mikado to the lowest tidewater, tapers off in an unbroken perspective of princes and officials on one side, and spies of equal rank on the other, this question had necessarily to be settled before the first interview. Were mining engineers and geologists mechanics, or were they of-

ficials? and if so, what position did they hold in the civil or military scale in the United States? In despair the question was finally submitted to Mr. Harris, who very diplomatically and considerately told them that were Commodore Perry (whom they knew) and ourselves at his house, he would treat us with the same consideration that he would the Commodore.

This settled the question, and we received a notification that the future governor of Yesso would come from Yeddo to call upon us. On the appointed day an officer arrived to announce the coming of the Governor, and soon after the loud jingling of the iron staff and rings of the street-warden gave notice of his approach. He came with a large retinue of officers, all of whom, excepting his immediate attendants, remained outside. The Governor Kadzu-ya-Chickungono-kami, and his *Ometzki,*[1] with three or four officers, seated themselves according to rank on one side of the room, with several scribes behind them, while we took seats opposite them, the Governor's interpreter being in the middle.

The Governor hoped we had recovered from the fatigue of our long journey. He had been told that we had met with head winds, and had made a stormy voyage. It was very kind in us to come so far to give the Japanese instruction in mining.

We replied that we had had a very rough voyage of ninety days, but that the interest we had found in everything we saw in his delightful country had quite restored us. We anticipated much pleasure in doing what we could in the field to which the Japanese Government had called us. We felt highly honored by the appointment.

[1] Every important officer had his double whose duty it was to report independently; at least such I was told at the time was the function of an Ometzki.

Several servants now entered and placed in a row two light and gracefully woven baskets of oranges, and two boxes, each containing about two hundred eggs. After asking us to receive "these trifling presents," and receiving our thanks, the Governor introduced business by inquiring whether, on approaching the coast of Nippon, we had been able to judge by the color of the sea or the taste of the water or of the fish, or by any other means, of the wealth or poverty of Japan in metals. He seemed a little surprised at our negative answer. This was the first of a long series of similar questions I had to answer in interviews with Japanese officials and the Board of Foreign Affairs at Pekin. They showed that these people, who have for thousands of years sought the philosopher's stone and the elixir of life, supposed that the scientists of the West possessed a key to open a royal road through the secrets of Nature.

After informing us that the Government had sent for a steamer to take us to Yesso, the Governor asked whether either of us had visited the mining districts of Europe. When told that I had made them the subject of several years' study he was much interested, and asked many questions concerning the mines and the manner of working them.

Kadzu-ya-Chikungono-kami, with whom we were to have a great deal of intercourse on the island of Yesso, was the type of a Japanese gentleman. He had a handsome face, with a fair complexion, and an exceedingly kind expression, and he had the modest and easy manner which marks the man of social culture in all countries, and especially in Japan.

The next morning the Governor returned, by appointment, to examine the instruments, etc., forming our outfit. During several hours he wandered among theodo-

lites, levels, chronometers, sextants, barometers, etc., asking an explanation of each object, and expressing the wish that he might be able to give time to the study of science. During this interview, as in that of the previous day, every word said was written down by the attendant scribes, while some of the officers amused themselves by sketching the novel display.

CHAPTER XXVIII

FIRST JOURNEY IN YESSO. PRIMITIVE MINING METHODS

THE object of the Japanese government in engaging the services of Mr. Blake and myself had been to introduce modern methods in some great gold and copper mines already producing, on the island of Nippon, the principal island of the empire. But the opposition of the masses and of certain reactionary leaders, who raised a hue and cry against foreigners, had made it necessary to abandon that plan. While waiting for instructions, we made a number of interesting excursions in the neighborhood of Yokohama, though we were, as foreigners, much restricted as to where we were privileged to go.

It was finally decided to send us to the island of Yesso for the purpose of examining the mines there and of giving instruction in mining to some men by whom we were to be accompanied. We sailed on the *Ringleader* for Yesso, and entered the harbor of Hakodade after a short and pleasant voyage. This town, the northernmost of the then open ports, is built on the footslope of a rugged peak, which, rising 1,150 feet, overlooks the straits of Tsungara, and commands a view of the hills of Nippon. This island-like peak is connected with Yesso by a low sandy neck, thus forming a harbor several miles broad, and accessible for the largest vessels.

Pending the building of a house suitable for our dwelling, quarters were assigned us at the custom-house.

It was necessary to first make a general tour of observation through the island. Accordingly, on the 23d of May, we set out on our first official journey. The Government had attached to us a staff of five officers, who were at the same time assistants, escorts, and pupils. Two of these, Takeda and Oosima, were chosen as having distinguished themselves in the study and application of European science; two others, Tachi and Yuwao, were officers of the mining department of the revenue office; the fifth, Miagawa, accompanied us in the capacity of both interpreter and student. Besides these, an *ometzki* was sent.

With our servants we made a train of eleven horsemen as we rode through the long paved street of Hakodade.

Crossing by the sand neck to the main island, we cantered over the firm beach to Arikawa, passing through straggling hamlets of fishermen where oil was being made from tons of reeking herrings, and threaded our way among a labyrinth of drying nets, and under myriads of noisy ravens and crows. These birds enjoy absolute security in all Japan. Welcome as scavengers, they are little feared by the farmer, who by a simple contrivance frightens them from the crops of his small fields.

After a short ride through a wooded valley we reached the lead mines of Ichinowatari, lying at the entrance to a rocky ravine containing a wild mountain torrent. The ore carried lead, zinc, and copper. In all Japanese mines the absence of pumping machinery prevented mining to any considerable depth below the level of the entering tunnel. The galleries were tolerably well timbered, though low and narrow. Owing to ignorance of blasting, their means of attacking the rock were — till powder was introduced by me — confined to pointed instruments: a miner's pick with one point, a hammer, and a gad with

handle, completing the outfit. The ore was roughly assorted by hand, and then passed under dry stamps.

I was not a little surprised to find, in the mountains of Japan, stamps constructed on the same principle as those of Cornwall and Germany, though far inferior in efficiency. They were worked by an overshot waterwheel, turning a cam shaft. The stamped ore was concentrated in wooden pans, generally by women, to a very pure slime.

These mines were very poor, their greatest production having been in 1860, when during a few months it averaged 600 pounds of lead daily. At the time of my visit it was about eighty pounds. As a curiosity I give below a schedule of the daily expenses at these mines:

Thirty miners, averaging 6 cents each	$1.80
Thirty coolies, at 8 cents each	2.40
Seven overseers, at 5 cents each	.35
One carpenter	.08
Twenty-six ore-dressers, averaging 3 cents each	.78
Two men at the stamps, at 4 cents each	.08
One smelter	.08
Two smelter assistants, at 4 cents each	.08
Two hundred pounds of charcoal	.17
Thirty pounds of inferior pig iron	.16
	$5.98

The vein was so small that even considering the cheapness of labor it seemed doubtful to advise much outlay in improvement. Some simple changes in the stamps, concentrating method, and furnace could increase efficiency. By the use of powder the rapidity of opening and mining could be greatly increased.

However, being now on a general reconnaissance, we could only make notes for future use.

As this was our first official journey, the Government had ordered that we should receive the same honors in passing through towns that were shown to the Governor on his annual trip. Thus we were met by the wardens of villages at the town limits, sometimes two or three miles distant from the houses. These men, coming on foot, went down on their knees as the train approached, and then, after touching the ground with their foreheads, jumped up and led the way to the inn. Independent of the fact that a European must feel more disgusted than honored by having a man kneel before him in the dust and mud, these men were a great nuisance, as Japanese ideas of dignity required us to follow them at a walking pace.

Japanese despotism had trained the people very thoroughly in the art of falling instantaneously on their knees. It was astonishing to see the effect of the magic word *sh'taniro!* (kneel) upon a dense crowd when a person of high rank was passing. As if by enchantment every gaping, laughing, and chattering native was prostrated, and a deep silence reigned, broken only by the jingling rings on the warden's iron staff, and the solemnly-repeated warning, *sh'taniro! sh'taniro!*

In most of the villages we found small heaps of white sand scattered along the streets, which we were told was intended as an honor for us.

We found out that in these prostrations the people were mistaken as to the persons to be honored. My colleague Blake, instead of having a Japanese manservant, had taken a negro named Trusty who had been a cabin boy on the steamer that brought us to Hakodade. He was the first of his color ever seen on Yesso. In our cavalcade Trusty rode at the rear, and we noticed that

the kneeling people waited till the negro came up before knocking their heads to the ground.

At Kobi, as at many points on the coast, large quantitie of magnetic-iron sand are concentrated on the beach by the surf, and a bed of the same material, much oxidized, crops out in the bluff deposits, which are themselves raised beaches.

Here Takeda asked me to go and see a furnace he had built to make iron. He wanted to know why it didn't work. We rode along the beach till there rose before my startled eyes a blast furnace thirty feet or more high. In its lines and finish it was the work of an artist. Answering my question, Takeda showed me the small picture of a furnace in a Dutch edition of Stockhardt's Chemistry. The picture was accompanied by practically no details for construction and use. The book stated that air was blown into the furnace. So Takeda made a wooden cylinder bellows, worked by two or three men, instead of a blast run by steam power, which had not been described in the elementary textbook. Still the iron had been reduced and smelted, but it had preferred to stay in the furnace instead of flowing out when tapped, hence Takeda's despair. I found that he had been trying to do the impossible, for the ore he used was the highly titaniferous iron sand from the neighboring shore. With an ordinary ore he would really have got pig-iron out of that furnace. And I do not doubt that his energy and quick intelligence would have led him, without outside instruction, to get a better method of making a powerful blast.

I showed Takeda on the spot how with such a furnace lined with fire-brick, and with a larger blast worked by waterpower, he could make a fair yield from proper ores.

Oosima also had built a furnace for his daimio on Nippon, and, having favorable ore, had succeeded, after repeated experiments, in producing pig-iron.

The character of these men appeared to me, suddenly, as prophetic. I had no doubt of the future of Japan.

Takeda was a man of lovable character and a fine type of the *Samurai.* There comes to my memory a remark he once made that was both striking and characteristic. It was soon after my arrival at Hakodade. I had been riding through the town, and been followed by coolies shouting: "*bacca! bacca!*" (fool! fool!) and pelting me with mud. I had lost my temper and had chased one of the men till he hid in a house. I asked Takeda what one should do in such a case. "There are only two courses open to a *Samurai,*" he said; "either pay no attention, or — draw the sword and *kill.* To do otherwise would be to lower yourself to their level."

To this lesson in the control of temper, which I took to heart, I owe the fact that I was able to come scatheless later through mobs in China.

We were now detained more than two months at Hakodade by the prevalence of measles over all the island, and in the families of the officers attached to us. During this time we gave regular instruction to our assistants in the branches bearing on mining and metallurgy, an occupation which, at the same time, gave me some insight into the intellectual capacity of the class represented by these men. The difficulties to be overcome were very great, as we were teaching subjects of which but few of the technical terms had Japanese equivalents, to students who were ignorant of the elementary branches which necessarily precede the study of applied sciences. But they showed anxiety to learn, as well as rapid comprehension. It had, however, to be very elementary. I

used a collection of the common minerals and rocks gathered on the excursions for teaching how to recognize them. The outlines of geology I taught verbally and by sketched illustrations and observation in the field. So also the methods of mining. I taught the use of the surveying instruments in the field as far as was possible in their ignorance of trigonometry.

Our interviews with the Governor and his council took place alternately at his palace and in our own quarters. At the palace they were always accompanied with tea and refreshments, and often with a Japanese dinner, while the short pipe of the country was in constant use. This was quite an important weapon in diplomacy, and a Japanese Minister or Governor never failed, when pressed with a question, to gain time for reflection in filling and lighting a pipe of their fragrant tobacco.

The Governor and all the high officers about him were men whose dignified bearing and refinement and suavity of manner would grace any Western society. And I remember that, as a rule, they showed consideration towards inferiors and servants, never exhibiting the passionate outbursts so common among Chinese officials — a difference perhaps arising from the consciousness of power with the Japanese. The governors never lost self-possession in presence of the sometimes excited and rude language of some Western representatives. On one occasion, in answer to my question whether this self-possession were inborn or the result of education, the Governor replied that it was made one of the most important features of training, from the earliest childhood through life. Indeed, so delicate was the sense of personal honor in the official class that the wounded feelings of an equal might easily cause him to retaliate by *hara-kiru,* thereby forcing the offender to perform the same operation. The

necessity for self-control thus rested on a basis no less strong than the love of life.

Formerly, in committing *hara-kiru*, the suicide actually ripped open his bowels. In my time he simply scratched the abdomen, drawing blood, while an attendant, dressed in white, gave the deathblow with a sword.

CHAPTER XXIX

SECOND JOURNEY IN YESSO. AINOS. I TEACH THE USE OF POWDER IN MINING

Towards the end of July the measles were so far on the decline throughout the island that we prepared a more extended journey of reconnaissance. On the 5th of August we left Hakodade for the west coast.

On this trip in a marsh near the large fishing village of Yamukshinai we found numerous tepid springs which bring to the surface a mineral oil of the consistency of tar. Several priests were using this product for light, and in the manufacture of India ink. These old men received us hospitably, and listened with incredulous wonder to our stories of artesian borings and flowing wells of petroleum.

The Hairy Ainos

Before reaching Yurup we passed through a settlement of the remarkable aboriginal race of Ainos, which was shrinking steadily in numbers before the superior civilization of their rulers. Although those whom we saw had been long in close contact with the Japanese, we were told that they did not differ much from those in the interior. They were of medium stature, and strong and compactly built. The face was broad, the forehead rather low, the nose short, and oftener slightly concave, in profile, than straight. Their eyes differ decidedly in

shape from the Mongolian type, and are black. Their color was perhaps a little darker than that of the Japanese; the smallest children were white.

But the most remarkable characteristic of this people, in which they differ from all other races of eastern Asia, is the luxuriant growth of their hair, which is straight, long, and glossy. The men have heavy beards of great length, and mustaches of such dimensions that they form a curtain which has to be raised to gain access to the mouth in eating. The whole body is more hairy than in other races.

A book on anthropology has a portrait of Tolstoi alongside of one of an Aino. The traits of the two individuals are nearly identical.

The women are short, tattoo their chins, and wear long earrings. The Japanese look upon the Ainos with contempt. But notwithstanding the degraded position which they are now able to assign to this people, the Ainos were able during more than a thousand years to maintain a vigorous defensive warfare. It is probable that they were the aborigines of Nippon; indeed, as late as the seventh century they occupied a considerable portion of that island. And it was not until about the twelfth century that they were brought into complete subjection by Yoshitzune. At present they are a mild, good-natured race, and the early European navigators found no terms too strong in praising their simple habits and virtues.

As we passed through the village we met several men who saluted us in the Aino manner, by lowering their hands gracefully from their mouths in stroking their long beards. The houses or huts were built of poles, covered with brush or rushes. They were rectangular on the ground, and curved at the sides and ends upward to the ridge pole; each hut was fenced about with reeds. Near

each of them was a small building raised about eight feet from the ground on posts, and serving as a storehouse for fish, sea weed, and so forth. Before many of the dwellings I observed the skulls of bears, raised on long poles. Reverence for this animal has not prevented the Ainos from becoming very skilful in the art of trapping. Sticks cut so that long tassels of shavings hang from the sides are also connected in some way with their superstitions. They are called *inas,* and are found raised on poles alongside of the skulls of bears, and stuck into the earth near graves.

The characteristics of the Ainos were formerly little known, but they are now assigned to the Caucasian race. It is not improbable that they represent a portion of the anti-Mongolian population of eastern continental Asia, of whom the easternmost islands have become the last foothold, just as the least accessible portions of the Indian archipelago, the mountains of China and Thibet, and the frozen regions of the Northeast contain the varied remnants of peoples who have no longer place in either history or tradition.

I Make First Application of Powder to Mining in Japan

At Yurup I made the first application of powder to mining that had ever been attempted in Japan. The men readily learned the art of drilling, but could not be persuaded to take any part in the charging, tamping, and lighting of the first hole. Neither they nor my officers would stay to watch the process, but left the mine in a body. They came back immediately after the explosion, fully expecting to find the works fallen in, and the rash foreigner buried in the ruins. Their delight was inde-

scribable when they saw the result of the blast, which, at the cost of an hour's labor, had accomplished more than they were able to do by their own process in several days. After this they stayed to learn all about the tamping and lighting, and very soon went through the whole operation without assistance. Then I showed how to place holes to the best advantage.

It is remarkable that the use of powder for blasting should have remained so long unknown to China and Japan, where it has been used for other purposes since very early times. It was amusing, too, to find the Japanese Government in 1862 urging to me the same objections to its use in mines that were put forward under similar circumstances by the governments of Europe two or three hundred years ago. It was not without some difficulty that I obtained permission to make the trial. The result was so successful that before I left Japan I was told that several princes had sent men to Yurup to learn the new process.

When, forty-two years later, during the Russo-Japanese War, I read that the Japanese had taken Port Arthur by blowing up a gate — to rush in while the débris was still falling on the soldiers — the thought came to me that this blast was the lineal descendant of the one I lighted at Yurup.

For the following year I had chosen for my work a geological survey of the accessible parts of the island. I believed, from my observations along the shore, that a study of the exposures along the coast around the island, supplemented by such as could be found in the interior along the larger rivers, would yield an economically valuable knowledge of the geology of the interior. Mr. Blake would devote his efforts to instruction in mining and

chemistry. This seemed to solve most satisfactorily the problem of how we could best serve the Government.

A severe winter set in and we settled down in Hakodade to give instruction. I was now able to speak the common dialect fairly well. My companions had learned much on the excursions, in a rule-of-thumb way, about minerals and rocks and geology and about mining. There was thus a common ground on which to build, for we had specimens of the ores and other minerals and rocks that they and I had collected, as well as their own and my notes and sketches of geological structure and of veins of ore. Excepting the names of minerals and rocks, which they memorized, hardly any foreign words were used; sketches largely took their place.

The men showed intelligent interest and took full notes with sketches. I did not as yet attempt much in metallurgy.

We were not without social amusements in the isolated city. I remember well a masked ball given at the Russian Consulate on the occasion of a visit of some Russian war vessels. I put on the full suit of a Japanese warrior. Shekshi, my soldier-factotum, held the bit while I mounted. The terrified horse reared high and, as I brought him down, his hoof cut a gash in the scalp of Shekshi's wife who was near. She bravely made light of it, so I started. The moon shone on my dark armor, on the awful visor that hid my face, and on the great horns above the helmet.

My horse plunged, people wondered and scattered.

I had never been in the Consulate. The approach was up a high flight of granite steps. If the Russians rode up these, I must; but how would my charger like it with a rattling load? With good horse-sense he gave his whole attention to his feet. The astonished porter asked why

I hadn't chosen the level entrance on the side street; no horse had ever climbed those steps.

Everything at the ball was nice excepting that in dancing my iron helmet kept bad time on my skull. At first no one guessed me, but word had spread that the Japanese warrior had ridden up the steep flight of steps. Several said: "Of course you won't leave by that way; you couldn't."

"Why not?" I answered. "They are good practice for my horse." Of course I did not want to try this much more dangerous descent, and the thought that I had thus accepted a challenge to do it brought shivers that luckily were not needed. For when the party broke up I found that the host had ordered the locking of the high entrance, and had my horse taken through the gardens to the other doorway.

During this time there was growing the revolution which was to make, within a decade, the change from feudalism to a constitutional monarchy that required four centuries in Europe, and that made possible the position among the nations that Japan has since attained.

Among the charges brought against the Taikoon by the anti-foreign party was one which accused him, in engaging us, of throwing the resources of the country open to foreign spies. Finding itself losing ground, the Yeddo Government was forced to suspend many of its liberal schemes, and first of all to bring to an end our engagement. This was done in February, 1863.

The notice came overland by messengers, who brought a large quantity of presents. Takeda looked at them and remarked that the things did not agree with the list that accompanied them, and that much inferior objects had clearly been substituted.

So this was the end.

What had we accomplished for the country? Not much beyond a beginning. We had examined all the mining prospects that we had been asked to look at and found them of little promise. I had introduced the use of powder in mining. We had determined that, in the almost impenetrable forest that covered the great island, search for deposits of metals must be largely left to chance and to prospectors. We had found one occurrence of promising coal and indications of mineral oil, both of which seemed to promise to be of value. And there was a strong possibility of other occurrences of these on the island.

The Empire is rich in deposits of useful metals, and upon the island south of Yesso these, including iron, have been worked since very early times. The Japanese could mine only above the lowest water level attainable by their methods.

As the hour of leaving drew near the young officers who had so long been my companions and pupils showed how strongly they felt a separation which threatened to put an end to the study of foreign sciences in which they had become engrossed. To several of them I was deeply attached, and that the feeling was mutual was shown by tears in the eyes of Takeda, Oosima, and Myagawa when the moment of parting came, and which were the only ones I ever saw in the eyes of a man in Japan or China.

It was a beautiful morning at the end of February when we steamed up the long bay where Nagasaki faced us from a hillside. As I saw it that morning, bathed in sunshine, it lies in memory, a charming harmony of roofs, some of tile and some of thatch half-buried in rich foliage, and above this great solemn temples among towering pines and widespreading camphor trees.

As guest of our Consul, Mr. J. G. Walsh, I had here some happy days.

There were several coal mines in the immediate neighborhood, but as they were on princely domain they were inaccessible to me. After trying in vain to get permission to visit them, I concluded to leave for China, where foreigners had lately acquired the right of penetrating to the interior. Wishing to return to America by way of China and India, I had declined the invitation of Captain Bessargine to continue with him the voyage to San Francisco.

CHAPTER XXX

SHANGHAI

TOWARD the end of March I embarked for China on a sailing vessel. With feelings akin to homesickness I watched the green mountains of Kiu-siu and the Gotto islands till the last peak disappeared.

After a few days westwardly sailing, and already at a distance of two hundred miles or more from the China coast, the sea water lost its clearness, and became brownish-yellow, through the suspended silt which, brought by the Yangtz' Kiang and Hwang Ho from the interior of China, is rapidly filling the Yellow Sea and the Gulf of Pechili. Passing a day or two among the shoals at the mouth of the Yangtz' we at last entered the Wusung River. On either side of the stream high levees, covered with grass, shut out the view of the country beyond, allowing only glimpses of treetops and tiled roofs. Many Chinamen and dogs were always in sight on the embankments, and the passage of the river was frequently barred by fleets of junks, their decks literally crowded with diminutive natives, whose stolid faces, shaven heads, long queues, and incessant jabbering produced upon me an impression which was the foreshadowing of the endless monotony of life and character among this great race.

The city of Shanghai consisted of two parts, the old walled town and the foreign settlement, around which there had gradually collected an immense native population, mostly drawn thither from the surrounding country

for protection against the Tai-ping rebels. During this visit I found Shanghai anything but a pleasant place. Through the whole of April there were incessant rains and fogs, rendering the streets of both cities almost impassable. Still I managed to take many walks through the old town, than which a more filthy place can hardly be imagined. The streets were very narrow, often muddy. In China nothing is lost; even the parings of finger-nails and the clippings of hair from the barber's shop are bought and sold for manure.

Cholera was raging in the city, and the death rate among the natives was appalling. The source of the epidemic was then a mystery. The chief distributor of cholera was then supposed to be water, yet the Chinese never used it unboiled. In the light of our present knowledge I have now no doubt that the spreading of the disease was due to the vast swarms of flies that issued from the filth in which they were bred.

Still the fascination of the lapidaries and bric-à-brac shops was too strong to keep me from roaming daily through the ill-smelling labyrinth of streets in search of precious things. The shopkeepers were not friendly to foreigners, who usually came out of curiosity, but I always succeeded in breaking the ice, though I knew nothing of the language, and used only signs and smiles, with which one can everywhere say much. In one of these shops, where I got on friendly terms with the owner, he brought out a cubical brocade-covered box about four inches high, from which he took another similar box, and from it still another, and so on to a fifth. Out of this he raised affectionately a transparent blue ball about an inch in diameter. I thought, as he held it up, that it must be glass, but it wasn't; it was a sapphire, a wonderfully perfect stone of a deep blue color. Lost in ad-

miration, I asked the price. He wanted fifteen hundred dollars. I knew the stone absolutely as a mineral, but not as to its value as a gem. I knew that if its requirements as a gem were perfect, its value at home must be many times the price, otherwise it might have only the value of a mineral specimen. I had the money, but fifteen hundred dollars was a large sum for me to risk against a jeweler's demands. So I sorrowfully handed it back to the owner, and bought a superb rock crystal vase of ancient workmanship, from the looting in 1860 of the Summer Palace near Peking. I risked the price of this because I knew it not only as rock crystal, but as a choice work of art.

All the way back to the foreign settlement and all the day that sapphire ball haunted me, and kept before me in my sleep. In the morning I got up determined to take the chances, and went out to buy it. Alas! I spent days in tramping the labyrinth of streets only to fail in finding the shop. I know now that the stone was perfect in all respects.

China was probably, in the minds of most people, associated with the old picture in the school books of a man bearing a pole with a basket of rats at one end and one of puppies at the other. It was generally thought of as the home of all that was curious and ridiculous, and as the seat of every kind of vice. I confess that my first impressions of this strange people and their land were extremely unfavorable, but I pass these impressions by, giving in this narrative only those which were the result of maturer observation.

Few travelers get more than the most superficial acquaintance with the natives, and too often reflect merely the views of fellow countrymen living on the spot. And these views are apt to be tainted by race prejudice, and

by ignorance, and lack of human sympathy. This criticism applied in China much less to the missionaries than to the commercial foreigners. To the latter the Chinaman was a producer of needed articles, and a buyer of foreign goods. And if a foreign government showed contempt of the Chinese people by selfishly forcing upon them the horrors of opium,[1] why should the average representative of Western civilization not make the life and rights of the Chinaman subordinate to his convenience?

I will give here one of the many instances which I saw illustrative of this line of conduct. A steamboat which had been undergoing repairs made a trial trip, crowded with many of the leading foreigners of Shanghai, all, like myself, being invited for a pleasure excursion up the Wusung River. As we were steaming at full speed we saw, some distance ahead of us, a large scow loaded so heavily with bricks as to be almost unmanageable by the oars of four Chinamen. They saw the steamer coming, and, knowing well how narrow was the channel, worked with all their force to get out of it and let the boat pass. As we stood watching the slow motion of the scow which we were rapidly approaching, I listened for the order to stop the engine. The unwieldy craft still occupied half the channel, the coolies straining every muscle to increase her slow motion, and uttering cries which evidently begged for a few instants' grace. There was yet time to avoid collision, when the pilot called out: "Shall I stop her, sir?" "No," cried the captain, "go ahead." There was no help for it. Horrified at hearing this cold-blooded order, I waited breathlessly for the crash, which soon came. The scow struck under the bow. A shriek, a shock, and a staggering motion of our boat, and we

[1] Reference is to the Opium War.

were again steaming up the channel. Going to the stern I could see but one of the four Chinamen, and he was motionless in the water. Among the faces of the foreigners on the crowded decks there were few traces of the feelings which every newcomer must experience after witnessing such a scene. The officers of the boat looked coolly over the side to see whether the bow and paddles had suffered any damage; and such remarks as were made upon the occurrence, were certainly not in favor of the victims. I should add that probably only a few of the passengers knew what had happened. This was fifty years ago; it could not happen now with impunity.

The instance I have cited admitted of no excuse, as a few minutes' time could be of no importance on a pleasure excursion. It was too often the practice of foreign vessels to run into junks or boats that might be in their way, no matter how crowded with passengers these might be.

After such an occurrence I was not surprised to see foreigners, walking through crowded streets, hitting the heads of Chinamen with walking sticks to open a path, nor at the constant occurrence of similar abuses engendered and encouraged by the absence of any means of redress on the part of the natives.

I would not be understood as bringing a sweeping charge against all the foreign inhabitants of China. There were many noble exceptions, but as such they were powerless beyond the sphere of their own employees.

My description of these incidents, seven years later in my book *Across America and Asia* (1870), cost me some friendships in China, especially that of Mr. Edward Cunningham, to whose delightful hospitality I owed much of the pleasure of my stay in Shanghai.

CHAPTER XXXI

JOURNEY UP THE YANGTZ' KIANG BEGUN

A Narrow Escape

I had seen a Chinese boat arrive loaded with an exceptionally pure anthracite. I was told that it came from the Siang River in the middle of China. The longing to explore came over me.

Excepting missionaries few travelers had penetrated for information far into the interior. Huc had descended the Yangtze from Thibet. Blakeston has described that river. The geology of the Empire was absolutely unknown, for Richthofen had not yet undertaken his monumental work.

So here, as in Corsica, yielding to the call of the unknown, I engaged passage on the steamer *Surprise* bound for Hankow, the end of steam navigation up the Yangtze.

I had been for weeks living a quiet life in the hot and muggy weather of Shanghai. I had smoked a daily average of twenty-five Havanas. The morning I was to start I fell in a heap on the way to the washstand. I sent for the doctor. He examined and asked questions. At last he said: "Do you smoke?"

I said: "Yes."

"Then you must cut down to half. How many cigars do you smoke?"

"Twenty-five."

"That's killing here," he answered; "better stop."

He gave me a bottle of transparent red flakes of something.

Going on board the *Surprise,* we steamed down the Wusung River, and out upon the broad estuary of the Yangtz'. The brown flood of this great river, the "Son of the Sea," empties into the ocean with a breadth of nearly fifty miles. It might be aptly called the "father of the land," as the immense quantity of silt rolled oceanward by its current is steadily adding to the continent.

During the first day of our journey, where the shore was visible, the land beyond was hidden by the levees. On the second day the tops of hills were seen in the distance, rising gradually above the horizon, and promising a variety in the scenery for the coming day. This promise, however, was not to be fulfilled.

Pacing the deck with the captain in the brilliant moonlit night, I asked which of the steamers of the line was the fastest. "The *Huquang,*" he answered. "She is in all senses the fastest, as she has been left high and dry up the river by the falling flood. She'll be there for a month yet."

About midnight I was awakened by a loud noise under the window of my stateroom, which was just astern of the starboard wheelhouse. Looking out I found that the engine had stopped, and a number of Chinamen were trying to lower a boat from the davits. Just then the wheels began to move, and supposing that we had merely been aground, I returned to my berth and fell asleep, to be soon reawakened. We were again standing still, and the Chinamen who had been making frantic efforts to loosen the boat were gone, while a confused din from the forward deck betokened some most unusual excitement. Knowing that we had on board a large number of Chinese

passengers, it occurred to me that they might be merely a gang of rebels or pirates, who had mutinied in order to seize and rob the steamer. Such things had occurred before in Chinese waters, and the mere thought of it caused me to buckle on my revolver before going forward. The long saloon was empty, and filling with smoke. Rushing over the forward deck, I nearly fell into a great hole, cut from the port side more than half-way across the vessel. A man on the opposite side of this hole warned me to lose no time in saving anything I might have of value, adding that although our bow was grounded on a sand bank, there was fifty feet of water under the stern, and that she must soon break her back and go down. The crew and the Chinese passengers were in the boats, and the steamer was evidently on fire. I hurried to my stateroom, and, after dressing hastily, set about saving first the money, then my charts and instruments, fearing that each instant's delay might make me a second too late. Carrying all my property except some toilet articles and a box of cigars, I reached the bow and found the man who had warned me already in the boat and on the point of leaving. Learning that we had been run into by the *Huquang,* a steamer which had been aground up the river for eight months, I rushed back to my stateroom and saved my cigars. Before we had pushed off the steamer was in flames.

The collision had been caused by a misunderstanding of signals. Mr. Osborne, the captain of our boat, was knocked overboard by the shock, and although a good swimmer, was never again seen. The collision had actually occurred before I was aroused the first time, and when I had gone back to my berth the boat was fast sinking, and had I not awakened of my own accord I should probably have perished in it.

I remember noticing that a glass filled with water on a shelf at the head of my bed was not spilled. The ship had been cut through like an eggshell.

As soon as we had reached the *Huquang* the latter continued its course down the river, lighted on its way by the flames of the burning wreck.

After a delay of a day or two at Shanghai, I started again for the interior on the return trip on the *Huquang*. This vessel was one of the finest and fastest river steamers in the world, and, like the other boats of the line, was built in the United States.

A little more than a day's journey brought us to the wreck of the *Surprise*. The hull was burned to the water's edge, and little else was visible than the framework and warped rods of the machinery. This boat was once a favorite steamer on the California coast.

About four miles above the scene of the accident we passed the point where the imperial canal crosses the Yangtz' and entered the treaty port of Chinkiang. This city had formerly great commercial importance from its position at the intersection of the two great routes of traffic. But during later years the silting up of the canal, and the destruction by the rebels of industry and trade throughout the productive neighboring country, had reduced it to a miserable condition.

Above Chinkiang we left the lowlands and entered the hilly district, which, surrounding Nanking with a radius of forty or fifty miles, rises like an island from the great plain. As we approached the ancient capital of the Empire, its gray walls were seen winding across the tops and along the crests of the hills, but the city itself was mostly hidden by the inequalities of the surface. It was then in the ninth or tenth year of its siege, and few of the monuments of its former greatness had been spared by the

hand of war, or the fanaticism of the rebels. Its grand pagodas and the porcelain tower were so many heaps of ruins.

The rebels, not being disposed to openly antagonize the foreign powers, did not interfere with the steamers on the Yangtz'.

CHAPTER XXXII

AN AMERICAN FREE LANCE CHECKS THE TAI-PING REBELS

THE progress of the Tai-ping rebels was everywhere marked by destruction, rapine, and murder. Nowhere did they attempt a reorganization of the industry and society which they had trampled down.

They left an awful track of desolation through southern and central China, to which had been added the horrors of a great flood. The Hwang Ho (Yellow River), which had for centuries been confined to one course by a system of levees, had gradually raised its bed until the stream was high above the surrounding country. Only by the annual expenditure of many millions of dollars, and the constantly applied labor of an immense force of men, was this turbulent river kept from bursting its barriers. The exhaustion of the imperial treasury by foreign and internal wars, and the official corruption reigning throughout the Empire, had occasioned an almost total neglect of this, the most important public work.

On the arrival of the rebels their ranks were swelled by the disaffected and starving guardians of the river. The neglect of the embankments was followed by a breach near the city of Kai-fung. For several hundred years the Hwang Ho had flowed in an east-southeasterly course into the Yellow Sea, but at different times during Chinese history it had traversed almost every portion of the great plain. Bursting its northern barrier, this

stream, one of the largest in the world, now poured with its whole volume over the plain of Chihli and Shantung, submerging immense areas, and finding outlets in the Gulf of Pechili, several hundred miles north of its former mouth in the Yellow Sea. When we consider that the average population of these two northeastern provinces was about four hundred and fifty to the square mile, and that the region overflowed was by far the most populous, some idea can be formed of the magnitude of the suffering which must have been caused.

In addition to the great loss of life there came the misery entailed by the destruction of crops, and the plunging into beggary of dense populations. These starving millions, pressing in among their more fortunate neighbors, soon reduced the whole country to a condition of famine and anarchy. A necessary result of this state of things was the gathering of numerous and large bands of robbers.

Three years before my visit a new element entered into this long contest. An American by the name of Ward, acting under a commission from the Imperial Government, and assisted by a few daring foreigners, organized and disciplined a force of native soldiers. Thoroughly practised in the Western drill, kept under the strictest discipline, and led into action by the bravest of officers, these native troops entirely disproved all the Western ideas concerning the efficiency of Chinese soldiers. Inspired by the reckless daring of Ward, who was always first in the breach, the men showed themselves unflinchingly brave; and as they wrested by storm city after city from the rebels, they won the name of the "Ever Victorious Braves." General Ward was killed at the taking of Tsekie, and the command was transferred to Burgevine, one of his assistants, and like him an American.

Continuing in their successful career, the "Ever Victorious Braves" increased the number of imperial victories, until at last, under the command of Major Gordon, since known as "Chinese Gordon and the hero of Khartoum," they captured the city of Suchau, which next to Nanking was the chief rebel stronghold. The backbone of the rebellion was now broken, and the taking of Suchau was followed in a few months by the fall of Nanking, after a siege of nearly eleven years.

Ward was a free lance who had an interesting past. I am sorry that I missed the chance of knowing him. He had been of the filibusters in Central America. Escaping from there he became a sailor, and mate on a vessel sailing from San Francisco. Soon after sailing there came up a severe storm. The crew rebelled and stayed below in the forecastle. No amount of profanity could bring them out to take in sail. Ward dropped an opened keg of powder into the forecastle, then flourishing from above a burning brand from the cook's galley, and using much ungenteel language, he brought those men to a quick sense of duty. When he arrived in China the sea was swarming with pirate junks. With an eye to business, he contracted with the Chinese Government to destroy the pirates at so much a junk. Using the old steamer *Confucius* he made a fortune, and nearly rid the sea of pirates, though it was said that to him all junks were pirates.

At this time the Tai-ping rebels had taken many important cities near Shanghai, and were kept away from that port only by fear of the foreign warcraft. Ward contracted to take these places at so many thousand dollars a city, and he did it.

After his death the Chinese Government raised a monument to his memory, and ennobled him, which meant en-

nobling not only him but all of his ancestors, though not his descendants; the aristocracy of China has always ascended and not descended — a very economical system.

But let us return to the narrative, from which the sight of the beleaguered city has drawn us into a digression. Neither Suchau nor Nanking had yet fallen, although one of the longest sieges in history was drawing toward its close.

Passing out of the imperial lines, we steamed up the river, now through a broad valley with isolated hills rising from the plain, now approaching near to mountain ranges two and three thousand feet high. For many miles below Kiukiang the east bank of the river is determined by a range of barren hills, outlyers of the Kingteh group, famous for its kaolin and porcelain manufactures. A high and picturesque island rock with precipitous sides rises in the middle of the river. This is the Siau-ku-shan, or Little Orphan Island, and the quaint buildings which crown its cliffs have a historical and legendary interest among the Chinese. During a storm a boat containing two boys and their parents was sunk, and the parents drowned. A great frog took the boys on its back, but the youngest boy, grieving for his parents, threw himself into the water and drowned. On account of his piety he was changed to a rock which grew upward to form the beautiful peak of Little Orphan Island. The frog carried the older child into Poyang Lake where he too was drowned and arose in the form of Great Orphan Island. In the same lake the frog, for its humanity, was changed into the island called Frog Rock.

There were at Kiukiang many refugees fleeing before the rebels, and seeking protection in the city, which was now defended by foreign powers. A large proportion of these unfortunates had been well-to-do families, but now,

reduced in numbers by violence or starvation, and plundered of everything they had possessed, they were indeed pitiful objects. Mothers, whose husbands had been killed or impressed by the rebels, brought their children to foreigners, begging them to adopt them, and praying in return only that their little ones might be insured against starvation.

Above Kiukiang the river breaks through several ranges of limestone hills, the rugged cliffs and outlines of which render this portion of its course extremely picturesque. Indeed, the journey from Chinkiang to Hankau is one not easily to be forgotten.

At Hankau Mr. Breck, the American Consul, kindly offered me the hospitality of his house.

The cities of Hankau, Wuchang, and Hanyang, situated at the junction of the Yangtz' and Han rivers, were estimated by Abbé Huc to contain an aggregate population of eight millions. Although this estimate was probably much exaggerated, it is probable that the three cities, comprising a provincial capital, a departmental center, and a chief market town, formed the largest assemblage of population in the world. Hankau, almost exactly in the center of the Empire, was the focus of commerce for all the immense region drained by the upper Yangtz'. It was also the point of trans-shipment into steamers and sailing vessels for the trade of this region with eastern China and the foreign world. Here I saw clipper ships taking in cargoes of tea for the direct voyage to England. Moreover, it was the starting point for the large overland trade with Russia. It is now the point where the railway that crosses China from Peking to Canton intersects the great trade route of the Yangtz' River.

It was just two years after the capture of these cities by the rebels that I visited them. Hankau, always an im-

portant center, under the protection of foreign flags and the impetus given by foreign trade, rapidly became one of the most populous cities in the Empire.

Crossing over to Wuchang, the provincial capital, I was struck with the fact that while Hankau had far outgrown its former limits, the population of its neighbor had shrunken to a small fraction of its recent size. Under the guidance of some ragged soldiers, I took a long ramble along the top of the wall, which is said to extend fourteen miles around the city. It had suffered very much during the rebellion, and had recently been repaired at great expense.

Excepting along a few of the principal streets, the city was in ruins. Grass was springing up on the top of the wall, and among it there was growing the wild strawberry; but it had a sickening taste, which was common to this fruit wherever I found it in Asia. Descending from the wall, I started upon a stroll through the ruined part of the city; but, overcome by the accumulated filth, I was soon forced to abandon the attempt.

Hastening out of this foul atmosphere, I crossed over to Hanyang. This city was a complete ruin. Only here and there appeared an inhabited house, while from the top of a high ridge, which traverses the town, the desolation was visible on all sides. This narrow ridge is continued on the opposite side of the river, through the center of Wuchang, where several streets are said to pass through it in tunnels.

This was in 1863. In 1911 Ross ("Changing Chinese") tells us that Hanyang has an iron and steel plant employing 5,000 men. It is already selling its product on our Pacific coast.

In making the preparations for the continuation of my journey I was largely indebted to the kind assistance of

Mr. Dick, of the Imperial Maritime Customs. While fearing that I should have to go alone, I found in the Rev. Josiah Cox a companion without whom I could hardly have accomplished the trip.

My plan was to penetrate the coal fields of southern Hunan, and, thence returning to the Yangtz', to ascend to Sz'chuen. But from every side we were warned against entering Hunan, as the population was infuriated against foreigners. Several months previously some lawless soldiers had descended the river in boats which they had impressed in Hunan, and while at Hankau had kidnapped an Englishman, and nearly murdered him on one of their boats.

Still we determined to make the attempt. The first necessity was a disguise. Unfortunately for the execution of this plan, Nature had made us both decidedly un-Mongolian. Each of us stood nearly a head higher than the tallest Chinaman, and my light hair and blue eyes would have been very hard to disguise. The former could have been dyed, and the color of the latter hidden under a pair of blue Chinese goggles; but an insurmountable difficulty presented itself — I had thoughtlessly had my hair cut close just before leaving Shanghai, and there was nothing to which a tail could be fastened. So we concluded to make a virtue of necessity, and show that the proper way for foreigners to travel was as Nature and the tailors at home had made them. I confess it was not without many misgivings that we hastened our preparations.

After much searching we succeeded in finding a passenger boat of about eighty tons burthen, commanded by a skipper who assured us that he was thoroughly acquainted with the waters of Hunan and of the upper Yangtz'. A carefully worded contract was drawn up

under the supervision of Mr. Dick and Mr. Cox, both of whom were well versed in the language and character of the Chinese. Almost the only provisions we laid in were rice, sardines, crackers, and ale.

CHAPTER XXXIII

BOAT JOURNEY CONTINUED

Beset by Mobs

We went aboard at midnight March 23d. The weather was hot, and the air loaded with horrible smells from the foul mud.

Quarreling over the terms of the contract kept us moored till late in the afternoon. By this time I was down with a low fever. Mr. Cox begged me to stay in Hankau till the fever should be over, but I felt that if my illness were a dangerous one I should be more likely to die in the foul air of the city than on the water. I had rather die in the fresh air on the broad river. This decision perhaps saved my life. I have never known what kind of fever I had. I was very ill for more than a week and had a slow recovery. As soon as I could crawl from my bed out onto the boardwalk surrounding the boat, I lay down on this dressed only in silk pajamas, and had cold water thrown over me, then I went, still wet, back to bed.

Our boat was a flat-bottomed craft, with a house extending nearly two-thirds the length of the deck, and divided into four cabins communicating with each other. Giving one of these to our servants, and another to Mr. Cox's Chinese writer, we made ourselves quite comfortable in the remaining two. By means of sailing, sculling, poling, and tracking, with a crew of nine men, we man-

aged to make about twenty miles a day against the current.

On the eighth day from Hankau we passed the departmental city of Yochau and entered the Tung-ting Lake with a favorable breeze. This water had the reputation of being visited by dangerous squalls. Therefore, on the morning before our entrance upon the treacherous water, and as a propitiation of the elements, the discharge of firecrackers and the beating of gongs were prosecuted with more than usual vigor. Not trusting, however, to these preparations alone, our skipper kept quite close to the eastern shore.

Two days of sailing and sculling brought us in sight of the southern shore of the lake. The season of high-water had begun, and the level was gradually rising. A lofty pagoda, whose base was washed by the increasing waters, served as a landmark to guide us toward the mouth of the Siang River. This pagoda was one of the few left standing by the rebels in their destructive course. These beautiful towers, which form the most characteristic feature of Chinese landscape, are always polygonal, and built with an odd number of stories, and are sometimes nearly two hundred feet high. The exterior is often highly ornamented, and indeed built with glazed tiles. The famous tower at Nanking was faced with blocks of fine porcelain. The walls, always of great thickness, are built to last for ages. Standing in close connection with the *fungshui* doctrine, the strongest of the Chinese superstitions, they exert, as the people believe, a most powerful influence in controlling certain supposed currents in earth and air, which are held to be important agents in modifying, for better or worse, climate, crops, health, and even the ordinary actions of man. Strangely enough, one of the strongest objections raised by the

Chinese against the introduction of telegraphs and railroads is that they would disturb the course of these currents, and bring calamities upon the nation.

The valley of the Siang-ho (ho means river), which we now entered, lies between high hills fringed with the same red terraces that border the lake.

Two days of tracking and poling brought us in sight of the walls of Changsha, the capital of Hunan.

During the past few days we had several times been seriously annoyed by attempts to impress our boat for soldiers descending the river. Hitherto Mr. Cox had prevented them from boarding us by explaining the power of our passport. But as we were slowly moving up the river, along the bank opposite Changsha, a party of soldiers had come aboard and raised the imperial flag before we were aware of their presence. In vain we urged the rights guaranteed by our passports. They insisted upon keeping the boat. Not wishing to resort to force we made a compromise, by which they agreed to remove the flag, while we promised to remain moored to the bank until they should return with an officer. It was clear that we should have to await their return from the city; and as the river, owing to the inundation, was a mile or a mile and a half wide, with a swift current, we could hardly expect them under two or three hours. We moored under a low bank, the bow of the boat being connected with the shore by a rope of braided bamboo.

A little before sunset several boats loaded with soldiers made their way across the river and landed just above us, and we immediately saw that they had brought no officer. Three of our former visitors came on board and renewed their demand for the boat. Mr. Cox met them forward, and, while refusing to give up the craft, first requested that they leave and finally drove two of them

off; while at the same time, with the utmost coolness and a pistol, he prevented any more soldiers from jumping on board at the only place where the boat touched the shore. Till then an excited crowd of a hundred and fifty or more, villagers and soldiers, armed with swords and pikes, had collected on the bank, and had been shouting out to those upon our boat to kill the foreign devils. The remaining one, running aft along the platform which surrounded the boat, attempted to beat in my cabin door. Feeling that words would be no longer of use, although I was still too weak to be much out of bed, I threw the door open from the inside, and, weak as I was, gave the man a sudden blow as he started back, which sent him headlong into the river. This was the signal for a general attack. The mob having neither firearms nor stones, opened upon us with a perfect storm of lumps of sun-burnt clay. They were more successful with these than with their pikes, which were too heavy to be conveniently managed across the twelve feet of water between me and the shore; still it was not always easy to dodge their thrusts, and not wishing to be spitted on such a weapon, or to be beaten to a jelly by their missiles, I drew my revolver and opened fire upon the crowd. Unfortunately, in the confusion of the moment, I dropped the pistol overboard. However, I got another from the cabin, and reopened upon the mob, supported by my companion at the bow, who showed far more coolness than I did. The bullets caused the assailing party to fall back, and before they could return to the attack a new actor, or rather actress, came upon the scene in the person of our skipper's wife. Flourishing an immense knife, she rushed to the bow of the boat, and began to hack away at the bamboo rope by which we were moored, at the same time pouring forth such a torrent of abuse as can only flow in Chinese ac-

SHE BEGAN TO HACK AWAY AT THE BAMBOO ROPE . . . AT THE SAME TIME POURING FORTH A TORRENT OF ABUSE.

cents from the tongue of a Chinese virago. In the meantime the crowd, although kept at a distance, made her the focus of a volley of missiles. She stood the attack bravely, never flinching either from her work with her knife or from her torrent of abuse. Clearly the Chinaman was right who said that a woman gains in her tongue what she loses in her feet.

Suddenly the cable parted, and, yielding to the current, the boat whirled quickly into the stream. A new difficulty now arose. All the crew had jumped ashore and run off in the beginning of the fight, except the captain and one man, and these had hidden below the deck.

The woman now turned her attentions to these. Taking the lid from the scuttle she plunged her hand silently into the darkness, and, holding by the pigtails, dragged out first the man, then her husband. Then she said things that sent the men humbled to work.

All we could now do was to guide our craft toward a small island which lay about a mile below us. It was already nearly dark, and heavy clouds betokened a coming storm. We could see the soldiers embark and make their way as rapidly as possible across the river, where we knew there was a large force of their lawless comrades, and from these we expected a more determined visit during the night. We had hardly moored to the island before the storm came on, and with such a fury that it was evident we should be safe from any attack while it lasted. It was almost morning before the waters were quieted enough for us to send a man in the small boat to Changsha, with a letter to the Lieutenant-Governor of the province. In this document we complained of the soldiers, and asked for an escort to accompany us up the river beyond the city.

Soon after daylight a boat was seen coming toward us

from the town. We watched it rather anxiously through our glasses, not knowing whether it contained friends or foes. We were, however, quite prepared for the latter, having all our arms spread out, including even an old "Tower musket," loaded with revolver balls. The boat, which was a large one, contained some twenty or thirty soldiers, among whom we discovered, to our relief, three officers; one of them was the chief of the river police.

As soon as these were seated in our cabin, they informed us that they had been sent by the Lieutenant-Governor to offer any assistance we might need. His Excellency, they said, had already received instructions from the Viceroy to aid us on our journey, and His Excellency had heard with the most profound sorrow of the attack made by lawless soldiers upon the honorable members of the exalted American country, and of the exalted English country. The soldiers, then on their way to Nanking, were desperadoes, robbing and murdering wherever they went, and were utterly beyond the control of His Excellency, or even of their own officers. These visitors gave us to understand that they were instructed to escort us during the rest of our trip on the Siang River; but either having formed an unfavorable opinion of our commissariat, or for some other reason, they suddenly left us a few miles above the city, inviting us to visit them on our return.

During two days we continued our journey upstream, gathering at every opportunity information concerning the coal districts. Many boats passed us loaded with coal from southern Hunan; but we observed that they were invariably smaller than our own craft. From the crews of these boats we learned that it would be necesary to change our means of conveyance, that even then we could hardly reach the mines in less than three weeks, and that the

journey would be attended with much danger, owing to the excitement against foreigners. Finding these statements corroborated at every step, I determined to turn back at Siang-tan, because all the boats had been impressed.

The next day after leaving Siang-tan we came in sight of Changsha, and a dense forest of masts lining the shore for two or three miles in front of the city.

Thinking to enter the town, we proceeded to look up the boat of the officer who had escorted us, and who, being in command of the river police, lived on his flagship. Having found this and moored our boat near by, we sent on board our cards and compliments, and soon received a visit in return. Our former guest was this time accompanied by the chief of police of the city. The latter gentleman had just given orders to facilitate our visit to the Lieutenant-Governor, when we became aware of an increasing distant rumbling noise. Just then the attendants of our visitors rushed in, pale and excited, proclaiming the approach of a mob. Opening the door, our eyes were greeted with a sight which, once seen, cannot easily be forgotten. Some ten or twelve piers of boats moored close together lay between us and the shore. Beyond these the whole space between the city wall and the river was packed with men. Evidently the news of the coming of the foreign devils had preceded us and spread like lightning. Apparently the whole male population of a great city was pouring out of the gates. Surging and clashing like an endless and many-colored wave, it rolled down the sloping bank, and advanced over the intervening boats, which rocked and swayed, threatening to go down under the moving mass that was sweeping over them. From exclamations heard on every side, we saw that the

intentions of the crowd were anything but friendly. They seemed many thousand strong. Pale with anxiety for us and for their responsibility for us, our visitors hurried into their boat, and, beseeching us to flee for our lives, shot across the river. The skipper had gone ashore, but without waiting for him we made quick work in casting loose, and in an instant were whirled into the current. We were none too soon, for already a half-dozen of the unwelcome visitors had sprung on board, and now to their great surprise found themselves prisoners. Now that we were safe we could look back with a different kind of interest on the imposing scene presented by the yelling mass of humanity. Our involuntary guests protested that they, as well as most of the crowd, had been attracted simply by a desire to see the honorable foreigners. They said, however, that the soldiers were inciting the crowd to mob us.

Many lives must have been lost in the frantic rush of these thousands over the boats, and unquestionably the authorities trembled till they had news of our safety. There was nothing that the Chinese officials feared so much as mobs in large cities. These disturbances gave full play to lawless characters, while the force of the police bore no proportion whatever to the necessities of such cases.

Seeking the island which had once before given us a shelter, we waited till the return of the skipper.

Having reëntered Tung-ting Lake, we crossed over to the mouth of a river which communicates through the Tai-ping canal with the Yangtz' Kiang. We were soon again upon the broad swift stream of the Yangtz', or, as it is called in this part of its course, the Kin-sha Kiang — the river of golden sand — a name derived from the

gold washings which occur along its course through Sz'chuen and Yunnan.

After an exciting journey on the rapids of the Upper Yangtz', I returned to Hankan and then to Shanghai.

CHAPTER XXXIV

CHOLERA DRIVES ME NORTHWARD

PEKING

I INTENDED to sail from Shanghai for India on a P. & O. steamer. Mr. and Mrs. Edward Cunningham kindly invited me to make their house my home in the meantime. I found the foreign society very interesting. The experience was also interesting in other ways, and instructive as regards both the natives and the foreigners and their relations to each other.

The European and American merchants still controlled the foreign commerce, and the great houses made large profits. There were also great Chinese merchants with a high standard of commercial honor both among themselves and with the foreigner; the word of each was held to be as good as a bond. The foreign houses bought Chinese products by samples, and the goods had the qualities of the samples.

Back of this commercial standard was the great moral check on which was based the whole political, social, and domestic organization of China — the reverence of ancestors. The individual was responsible for the family honor, the family was responsible to the clan and to the village. The son would face death rather than disgrace the family and the ancestors. Life insurance companies refused insurance to Chinamen, because beneficiaries would commit suicide in order that the insurance might save the parents from poverty.

Cholera was still raging and was now attacking foreigners. Many precautions were taken by my host and his family and all of us thought ourselves safe. One evening as I was playing billiards with Mr. Loring Cunningham — brother of my host — I felt some pain, and remarked that I hoped I wasn't going to have cholera.

Cunningham rested his cue on the floor and said:

"Nonsense! You're all rght. I've been exposed here all summer, and I never felt better than now."

In the morning, at daybreak, Dr. Simmons waked me — we had been friends in Japan.

"I want help," he said. "I was called to see the butler, and found him dying. I went to Loring Cunningham's room for help, and found him in collapse."

Poor Cunningham was too far gone to recognize us. The doctor gave me the necessary instructions, and came back often during the day. It was awful. Death I had often seen, but not this phase of dying. Poor, gentle Cunningham! He died as I was lifting him, at five that afternoon. When it was all over I thought how infinitely preferable to this was the sudden death of Grosvenor.

I was still much run down as a sequel to the fever on the upper Yangtz'. So I was not surprised when, as soon as Dr. Simmons came in after our friend had died, he made me go to bed, and examined me.

"You're not in a fit condition to go south," he said. "There's a steamer sailing to-morrow to Tien-tsin. You get out of here quick, and go north, or I won't answer for your life."

The next day I was taking in deep draughts of the sea air. I believe Simmons saved my life.

So after a sojourn of half a month in Shanghai I had embarked on a steamer for Tien-tsin, the port of Peking,

and in due time sighted the low coast of the Gulf of Pechili, and the mouth of the Pei-ho. As we entered this river we passed the scene of the terrible slaughter of English troops that led to the war of 1860. In landing the soldiers got stuck in the mud flat while exposed to the fire from the shore.

On arriving at Peking and after quartering ourselves in a Chinese inn, I made my way to the American legation, where I met with a kind reception from our Minister, and received, both from him and from Mrs. Burlingame, an invitation to stop with them during my visit. It is from this time on that I date my real travels in China, at least so far as traveling means a study of the people. During this visit, which was prolonged many months beyond my original intention, I learned to free myself from the prejudices which every traveler is apt to contract upon the China coast, and during my subsequent travels to look upon the people, with whom I was thrown much in contact, from a different standpoint. For the ability to do this I have to acknowledge my deep indebtedness to Mr. Burlingame, and to Sir Frederick Bruce. The broad-minded policy of these two men, based upon justice, and freed from prejudice of race, had begun a new era in the history of Eastern diplomacy.

While in Peking, I went on many interesting sightseeing excursions in the city. I especially frequented the curiosity stores and lapidary shops and the booksellers' quarter. But of these things I have not the space to tell in this book.

CHAPTER XXXV

ON AN IMPERIAL COMMISSION

In Search of Coal, I Discover Chinese Traits and Find Adventure

I had nearly finished the necessary preparations for a journey homeward through Tartary and Siberia, when, at the instance of Sir Frederick Bruce, the Chinese Government requested that I should undertake the examination of some of their principal coal fields. In order to suppress piracy and smuggling, the Government had instructed Mr. Lay, their Inspector-General of Maritime Customs, who was then in England, to purchase and send out a fleet of gunboats, officered and manned by Englishmen. Alarmed at the idea of having to pay from fifteen to twenty dollars a ton for English coal, and knowing that they had themselves large deposits of it, they decided to search for desirable fuel among their own mines.

The arrangements were made over a lunch at the Tsungli-yamun (Office of Foreign Affairs), with the officers of the Board of Foreign Affairs. The interview, which was very friendly, brought out some curious ideas with regard to geology. Among these was the belief in the growth of coal in abandoned mines: everything was produced by the coäction of *yin* and *yang,* force and matter, the active and passive, the male and female principles in Nature; and where surrounding conditions had once favored the production of coal, why should they

not always favor it? But at the same time they objected to extensive mining, on the ground that it would exhaust the store on which future generations would be dependent, an inconsistency in reasoning which they got over by saying that the rate of growth of new coal is not known.

It was agreed that mandarins, two civil and one military, should go with me. The question having arisen as to how my name could be intelligibly written in Chinese, Tung Ta-jin selected for the first syllable the word Pang as the nearest approach offered by the language, and wrote it for me on a card in a character in which the principal element was the sign of a dragon. Did they think there might be some connection between the intended approach to foreign innovations and the clutches of this terrific monster?

Through the kindness of Sir Frederick Bruce, Mr. Murray, of the English legation, was permitted to accompany me, and much of the success which attended the excursion was due to his excellent knowledge of the Chinese language, as much of the pleasure was due to his genial companionship.

The next morning, leaving the plain, we began the ascent into the mountains through a valley. Murray and I, as well as Ma, the military mandarin, were mounted on strong Tartar horses, while Wang and Too, the civilians, being more effeminate, were carried in open chairs. Ma was a Mohammedan, and a type of the better class of Chinese soldiers. Easy-going and tolerably frank, he did not hesitate to express his contempt for the effeminacy of the civil mandarins in general, and for those of our party in particular. A few years later after he had risen to be Vicerory of Nanking, one of the highest offices in the Empire, he sent a kind message to me by a mutual

acquaintance. Of the two civil mandarins, Wang, the elder, was a tall and well-conditioned man of about fifty, well informed after the Chinese fashion, and with a uniformly pleasant expression, which betokened a really kind heart. On the other hand, Too was a type of the too frequent class of overbearing and "squeezing" mandarin. His voice and manner, always harsh, became positively disagreeable upon the slightest provocation from an inferior.

The valley we were ascending was cut deep into the limestone, and shut in by high and ragged cliffs. A tolerably good road, leading over a low pass, brought us into another valley tributary to the Huen-ho, and after a short descent we drew up at an inn in the mountain hamlet of Tien-kiakwan.

Before entering the house Too called the landlord to him and treated us to a characteristic scene.

"What have you to eat?" demanded Too.

"Boiled millet and eggs," replied the landlord.

"What do you charge for your eggs?"

"Very little — almost nothing, only six cash apiece," was the reply.

"How dare you call that cheap? You must know that we are no ordinary travelers. The Emperor has bought foreign steamers, and Prince Kung has sent this gentleman to find coal for them; therefore you should let us have the eggs for three cash."

By this time Too had worked himself into a passion, and fairly shrieked his argument into the ears of the host and of the gathered crowd. By this appeal to patriotism he finally succeeded in reducing the price by, in our money, about one-tenth of a cent per egg, making a gain of about two cents on our bill, to be divided among the pockets of our escort.

Although within fifty miles of one of the largest cities of the world, we were in a region where money is little used, nearly all the small transactions of the people being effected by barter of the necessaries of life. The currency of China is very clumsy, the copper coin being so bulky as to render its transportation costly, while the uncoined silver is extremely inconvenient, as it is chopped into small pieces and has to be weighed at every payment, while the scales of sellers and buyers rarely agree, and the legal standards of weight differ several times in the course of a few days' journey. In Peking, besides the ordinary cash, there was a copper coin of which the actual value was less than that stamped upon it. This was useless beyond the walls of the city. Peking also enjoyed an institution which I had supposed formerly was peculiar to the United States, namely, an endless number of wildcat banks issuing paper currency. Their notes were useless out of town, as no one would take them, for fear the bank might have already failed, or that it might suspend before the notes could be presented for payment.

We found the inhabitants of these mountains a simple-hearted and civil people, who were quite free from the dislike of foreigners which prevails among the inhabitants of the South, and for which Europeans and Americans had chiefly themselves to blame. Although every ounce of food that is gained from these barren hills is won by the hardest labor, I saw few signs of suffering among the inhabitants. They are contented with the boiled yellow millet and a few vegetables, with now and then a dish of fried eggs, or a chicken which has passed the prime of life, whatever that period may be in the time allotted to a fowl.

The next day we continued our journey southward,

through a deep and narrow valley in the limestone. The high and precipitous walls frequently approached each other so closely that the valley became a gorge. At last we emerged into the more open country of the Huen-ho. Crossing a high spur, around which the river bends, we began our initiation into Chinese mountain paths. Our road now lay for several miles along the steep face of the mountain, and high above the rushing river. The road, paved with porphyry boulders, was almost impassable; the rounded surfaces of the stones had been worn smooth by the daily passage for centuries of long trains of mules loaded with coal. On such a road a false step might plunge both horse and rider into the roaring torrent below.

Soon after our arrival at the inn at Chai-tang, we were waited upon by the magistrate of the district, from whom we obtained a full list of the coal mines in the neighborhood.

Within this area the coal varied from coking bituminous to pure anthracite. The seam containing the Fu-tau mine averaged about seven feet in thickness, and produced a good steam coal. The Ta-tsau or "great seam," about three miles south of the Fu-tau, consisted of two beds separated by about eight feet of sandstone, and contained an aggregate thickness of forty-eight feet of coal, and was a deposit of good anthracite.

The other mines contain coal of a more bituminous character. Each variety had its distinctive Chinese name, and was mined for some special purpose in the domestic and manufacturing arts. The coking varieties were burned to coke; and at every mine the dust, which with us was thrown away, was mixed with a little clay and molded into cakes of artificial fuel. For many purposes, especially for use in the kitchen, this artificial

produce was esteemed more highly than when in the natural shape, as the globular form of the cakes admitted a ready draught, while their composition was said to have enabled the consumer to control the rate of burning much better than with any other fuel.

In large cities situated at a distance from the mines, the dust and cinders of coal were briquetted by mixing with the dung of cows and horses, and with clay.

The absence of machinery for draining had prevented the Chinese miners from working very far below water-level, and this point was soon reached. Aside from this, their whole system was so defective that the utmost capacity of production of any one mine in this district was less than two thousand tons a year. The works were entered by an inclined plane, which descended in the coal to less than a hundred feet below water-level, where it communicated with a nearly horizontal gallery, which, extending to the furthest limits of the property, formed the main thoroughfare of the mine. Though unable to work below this level, the Chinese miner literally exhausted the fuel lying above it. By means of using inclined planes connecting the levels, he subdivided the seam into pillars. Ventilation was effected either by air shafts or by a blowing machine, constructed much upon the same principle as our fanning mill for grain. The timbering, which was almost confined to the main level, was very costly, owing to the scarcity of wood. The accumulating water of the mine ran along the bottom level to the foot of the inclined plane. One half the width of this slope was cut out into hollow steps, four or five feet high, in each one of which stood a man armed with a bucket. By these the water was bailed from step to step until it reached the surface. In some mines this work was done entirely by blind men. The manner of

raising the coal was not less primitive than the drainage, the bottom level and half the width of the inclined plane being covered with smooth, round sticks, over which the coal was dragged in sleds by coolies. The passages had in time become so low that these men were forced to go on hands and knees, dragging the sled by means of a cord passed around the neck and between the legs. In this manner I crawled nearly three-quarters of a mile into one of these mines, with pads on my knees. The fuel sold at different mines of this district at prices ranging from $1.70 to $2 per ton — 2,000 pounds.

After having finished the examination of the Chai-tang district, I determined to visit the coal fields lying at the edge of the great plain, on the eastern slope of the mountain. At San-ki-tien we entered the coal field of Munta-kau, which lies in another arm or bay of the great plain, and found that a temple had been prepared for our reception, and that many little things had been done to make our stay comfortable.

The coal of this region was altogether anthracite, and many openings had been made upon the several beds. One mine which I visited had been worked to a horizontal distance of 8,500 feet. The seam was very irregular in thickness, varying from a few inches to six or seven feet. In this mine one man could bring to the surface only about a hundred and thirty-three pounds daily, owing to the great loss of time in dragging the sled a mile and a half on hands and knees. The ventilation was assisted in this mine by a very large fan-blower.

Proceeding southward, we skirted the foot of the mountains. On our left the great plain stretched away to the eastward. From slight eminences in the road we could see the gate-towers and pagodas of Peking, and the triple roof of the Temple of Heaven. On our right towered

a great peak of limestone, with ragged sides and high cliffs. Here on the summit, almost inaccessible, except for stairways hewn in the rock, and perched 1,500 or more feet above the plain, are the cloisters and temples of a

TEMPLE OF HEAVEN AT PEKING.

Buddhist monastery. The mountain is said to be honeycombed with caves.

After passing limestone quarries that had been worked during centuries we came to Ta-hwei-chang, or great lime depot. The walls had long been crumbling, till little was now left standing. But dilapidated walls in China are not necessarily a sign of decay in population or industry. As we proposed to dine at this place, we rode up to the principal eating house. This was open to the street, and long before our dinner was served the room was crowded

with the curious of all ages, anxious to see, for the first time, and not only to see but to feel of, the queer barbarians of the Western seas.

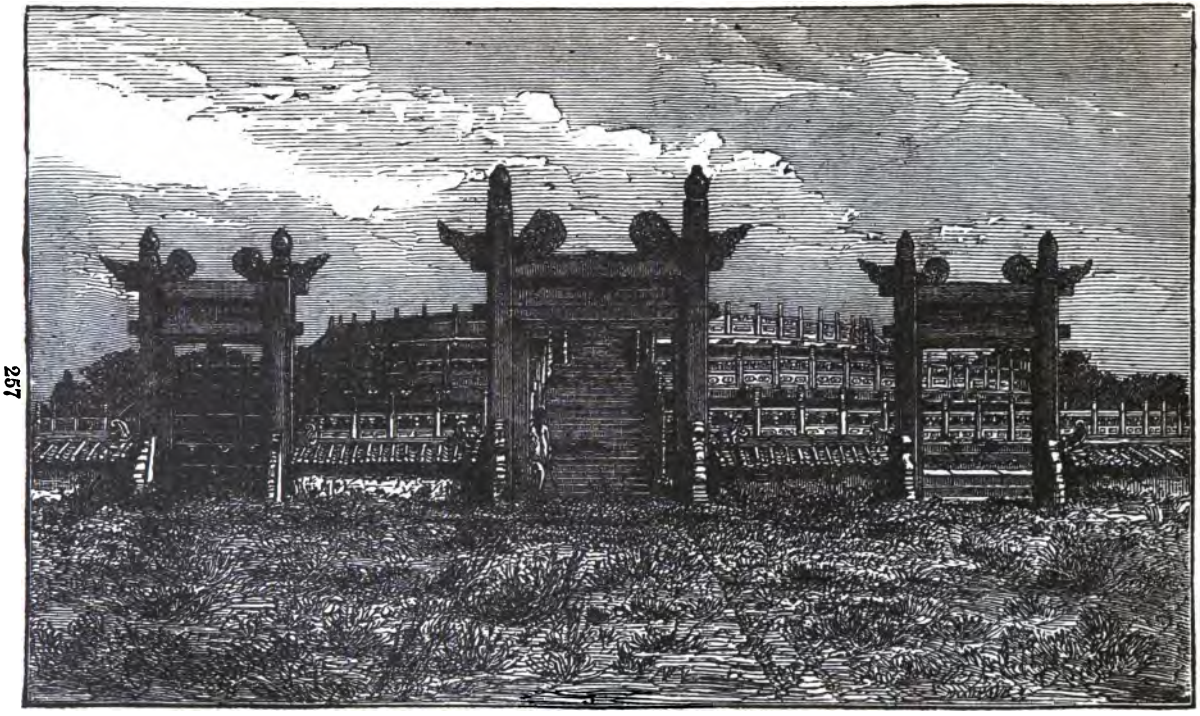
"Go out, boys," said Ma.

Upon this the largest lad in the crowd turned to one a little smaller, and exclaimed:

"Go out, boy — go out. Don't you hear that the *lo-yé* does not want any boys here?"

But this one, passing the injunction to a still smaller neighbor, it was repeated in a descending scale, till a little fellow about two feet high picked up the smallest child in the room and thrust him into the street. This turned the joke on us — always a disadvantage to a foreigner in a Chinese crowd. A traveler who has command of the language, together with patience and sufficient wit to put the more demonstrative members of even a Chinese mob in a ridiculous light, has little to fear, provided the crowd is swayed by no stronger motives than mere curiosity. If, however, he resent the personal annoyance by blows, he places himself in a position of great danger. An instance somewhat illustrative of this occurred to us in leaving Ta-hwei-chang. The whole population of men and boys followed us through the streets. From laughing at each other's jokes made at our expense, they proceeded to open ridicule, and, regardless of our official escort, began to hoot, and finally to throw missiles. Our situation was now very critical, but Murray stopped his horse, and, turning to face the crowd, raised his hand to motion silence.

"O, people of Ta-hwei-chang!" exclaimed Murray in excellent Chinese, "is this your hospitality? Do ye thus observe the injunctions of your sages, that ye shall treat kindly the stranger that is within your gates? Have ye forgotten that your great teacher, Confucius, hath said:



ALTAR OF HEAVEN.

Connected with the Temple of Heaven by a broad causeway.

'What I would not that men should do to me, that would I not also do to men?'"

The effect of this exhortation was as remarkable as it was unexpected by me. In an instant the character of the crowd was changed: the hooters and pelters had stopped to hear the barbarian talking in the familiar words of Confucius, the old men bowed approvingly, and a number of boys jumped forward to show us the way. Imagine a Chinaman quoting the Sermon on the Mount to a hooting mob of American men and boys, and the effect.

Before sunset I found myself again in Fangshan, but this time in quarters which had been prepared for us.

Among the principal mines which we visited in this neighborhood were those of Chang-kau-yü, in the mountains, about eight miles west of Fangshan. They belong to the family Chang, one of whose members was decorated with a blue button. We reached this place about noon. It was no slight undertaking to visit one of the mines. After reaching the foot of the inclined plane, I found the gallery so low for a great part of the distance as to be passable only on hands and knees. After creeping a long distance, the proprietor, who I believe had never been so far before in his own mine, gave out, and I continued my way to the end, accompanied only by the head miner. I had little strength left to use in examining the workings, which were conducted in the same manner as those already described. Much timbering was used, though chiefly the wood of fruit trees, etc., which cost at the mine twenty-nine cents per hundred pounds.

It was a source of great wonder to the Chinese, as it had been also to the Japanese, that a person acting under an Imperial commission, with authority to demand the presence of all officials on his route, should subject himself

to the hardships which attend a personal examination of a mine.

The day after our arrival at Fangshan we received an invitation to dine with the magistrate of the city. As we traversed the court of the Ya-mun, at the appointed time, our ears were greeted with a sound of suppressed chattering, and we could see that all the chinks of the surrounding windows were occupied by the ladies of the household. Our host led us into a room where the table was spread. In accordance with Chinese etiquette, he spent some time in persuading each of his guests to take the head of the table, a distinction which each one was bound by the laws of politeness to decline. The host, then standing in that place himself, insisted upon each and all sitting down before him, which, of course, was consistently declined, as it would have been a breach of politeness for a guest to take his seat first. The dinner began with a cup of hot rice wine. The table was loaded with dishes, which were placed one upon another in tiers, forming a pyramid of Chinese delicacies. There were soups made of birds' nests, of the haliotis, and of sharks' fins; there was *beche-de-mer;* there were stews and *patés;* there were roots of the waterlily; but it would take too long to enumerate all the dishes spread before us, each of which one was expected to taste. Great as is the variety of articles of food in the Chinese cuisine, some things which in other countries are considered most essential are missed by the traveler, and of these none more than butter, bread, and milk. There is a kind of bread which is cooked by steam, and there are flour-cakes fried in oil. They are good, but are poor substitutes for good bread. A little milk is sold, and women's milk is peddled round the cities, mostly for the use of invalids. Foreigners are shy of patronizing the Chinese

milkmen. There is an old story on the coast that at a dinner given by a foreigner, the host took a servant to task for serving no milk for the coffee.

"Boy go catchee milk," said the gentleman. The servant disappearing, soon returned with the answer: "No have got."

"What for no have got?"

"That sow have got too muchee piecee chilo (children)," replied the boy.

CHAPTER XXXVI

A DISAPPOINTMENT AND A JOURNEY DELAYED

On returning to Peking, I learned at the American legation that the Government, abandoning the idea of organizing a steam navy, had decided to send the flotilla back to England to be sold. This unwelcome news put an end to my hopes of being able to study the coal fields of the more distant parts of the Empire.

My winter had thus far been spent profitably. I had gathered a large amount of data bearing on the geology of northern China, to supplement my observations made in the central part of the Empire. These data showed that the geology of this large region, in the structure and direction of its mountain ranges and in the abundance of coal, resembled that of our Appalachian system. Between these sections remained a great gap. It seemed evident that a bed of limestone several thousand feet thick underlay all of that large part of China, and came to the surface in the folds that formed the mountain ranges.

A journey made in the beginning of winter to the Great Wall and the confines of Tartary had only served to excite in me a wish to penetrate further into that mysterious and then almost unknown region which occupies the great tableland of Central Asia. My wish was, first to travel as far west as possible upon the plateau, in order to gain some knowledge of the nature of the country, and of the character and habits of the people; and

then, after getting a traveling knowledge of the language, to try to reach the Pamirs and the plains and valleys which, lying between the Celestial Mountains and Himalaya, were then supposed to have been in the dawn of human antiquity the cradle-land of our race, though this is now a disputed question.

My preparations for the long journey were made, and I was waiting for the expected monthly mail to arrive. This came and I was to start early the next morning. During a walk on the wall with St. John to take a last look at the beautiful bronze astronomical instruments of the Jesuit fathers of the sixteenth century, I had severe pains. After dinner Dr. Lockhart came in and sat down beside me.

"You're not well," he said. Then raising the hair from my forehead:

"You won't start to-morrow; you have smallpox."

Mrs. Burlingame had given me a small building with two rooms, on the great court of the legation. Here I lay for weeks between life and death. During two weeks I had a peculiar delirium, peculiar in that I would have intervals of consciousness in which, for a few minutes, I remembered clearly the visions I had seen. Of those awful visions some are still distinct in memory. In one I was fleeing around the world before a band of villains. Once I overheard their talk, and learned that they wanted to kill me by running long needles through my ears into the brain. Then I was to be exhibited in Madame Tussaud's wax collection of great criminals. Just as the awful climax in these visions approached, I knew that if I could only open an eye far enough to see the top of my bedpost I would be all right.

In the wildest of all these visions — the one that haunted me — I was on a horse and chased by mounted

Indians along the crest of a jagged mountain range. In mad flight, springing from peak to peak across valleys and gorges, I looked back on a thousand Apaches racing in single file. Yelling, hair streaming behind, flourishing lances, that file of painted devils, sailing through the air, was pressing me close, returning my pistol shots with showers of arrows. At last a chasm too broad to span! Midway we fell, my horse and I; down we went whirling downward. I looked up; the Apaches, too, were whirling downward. I looked down; from far below there arose the roar of a mighty torrent dashing over rocks. Instant death was there — unless I could screw an eye open and see the bedpost.

The pistol shots were real. One morning my Chinaman-nurse was missing. His successor too disappeared. Dr. Lockhart met him the same day, and asked why he had left me.

"Me no likee that Mellican man," he said; "he try shoot me."

He told Dr. Lockhart that I had a pistol and a big knife under my mattress. These were found. The revolver was nearly empty, the balls were in the walls.

In the last of these nightmares Commodore Porter had come to Peking with his ship, and had come with all his retinue to call on the Minister. Only the middies stayed outside. They thought it would be nice to haze me. So they hung me over a line and began to skin me alive. How well I still remember the horror of it, and the appearance of my body without the skin.

Before they had finished, while my natural covering still hung attached at the feet, Dr. Lockhart frightened the middies away.

"I'm glad to find you looking so much better," he said cheerfully.

I opened an eye. The doctor was really there.

"Oh, doctor," I said, "how can you joke, how can I be better with my skin gone?"

"Wake up," he said. "You've been dreaming, but you're going to get well."

Then came many weeks of convalescence. The doctor kept me in strict quarantine. No mother could have been kinder than Mrs. Burlingame in seeing that everything was done for me.

During the several weeks of getting well the quarantine gave me undisturbed time for correlating my observations in China, and for studying the great volume of transcripts from the Chinese literature — work that I had expected to defer till my return to America.

My friends greeted me daily through the closed windows.

At last the doctor and Mr. and Mrs. Burlingame and some friends came to release me.

Sir Frederick Bruce invited me to go with him to the British legation.

While the great portal was opening for us all to enter, Sir Frederick said:

"We know how much you miss your mouflon, so I have found a companion ready for further adventures," and entering the court he led me to where a large eagle stood chained on a perch.

The huge bird made a vicious lunge, and spread his great wings. I don't remember how I eluded acceptance of the gift, or what became of the eagle. The mouflon's eccentricities among mirrors faded before the possibilities latent in that beak and in those grasping claws.

I was now ready to start on my delayed expedition to the West.

CHAPTER XXXVII

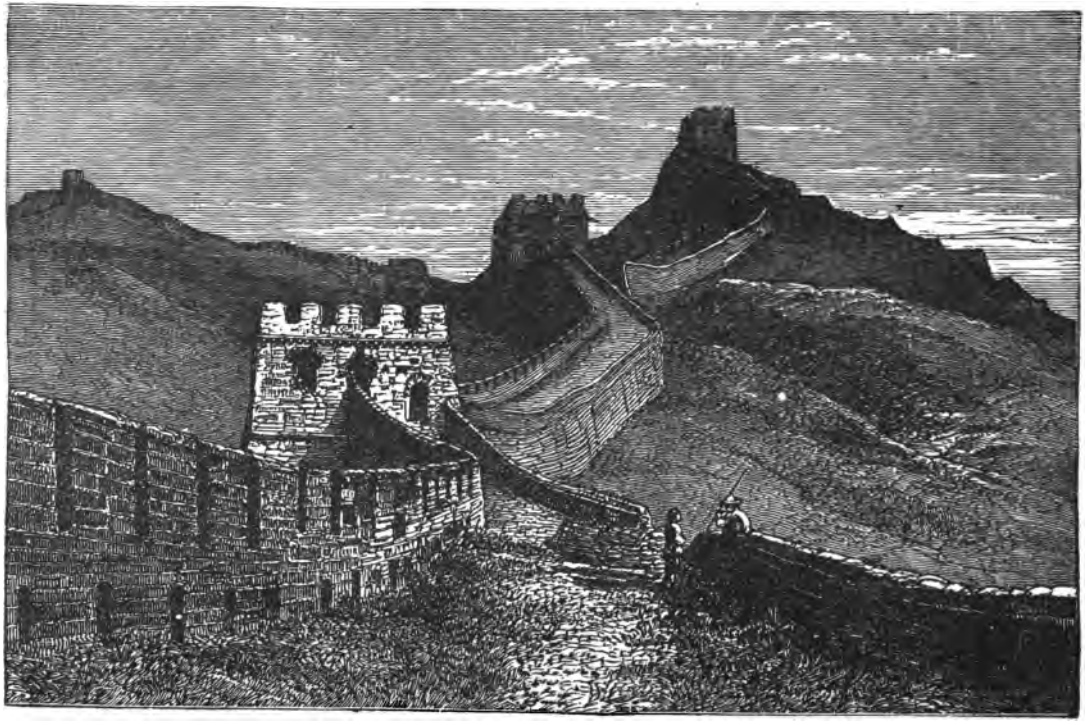
ALONG THE GREAT WALL

I WAS fortunate in finding in Dr. Pogojeff, of the Russian legation, a companion for the journey. On the morning of the 5th of April we left the northwestern gate of the city. Nearly the whole of our first day's journey lay over the road by which I had begun my trip to the coal fields.

Long before we reached the mountains we could see the dark line of the defile which leads to the Nan-kau pass, and the watch-towers and fortresses and walls, winding from plain to peak, which formed the innermost defenses of this important approach to the capital. In the evening we reached Nan-kau, our first resting-place, thirty miles from Peking. The next morning, leaving the plain, we entered the narrow valley winding for several miles through a desolate gorge, inclosed by high walls and yellow cliffs of limestone.

After traversing about two-thirds of the pass, the way leaves the valley. Here ascending by a difficult road through a desolate region of barren and shattered masses of granite, cleft to their base by gloomy chasms, we reached the summit and stood in full view of the inner branch of the Great Wall of China. This was built about 200 B. C., as a barrier against the hordes of Tartar cavalry.

The importance of this position led to its being well defended. The wall is from twenty to thirty feet high,



THE GREAT WALL OF CHINA.

built here of hewn rock, parapeted, well paved on the top, and defended by towers at regular intervals of a few hundred feet. This structure, here almost as perfect as when it was raised two thousand years ago, winds along the mountain crest, climbing every peak, descending steep declivities, and supported at the edge of precipices on bold masses of masonry. Look where one will, its crenulated parapet and gray towers are visible in lines which apparently double and redouble on each other, now standing out against the sky on the peaks above us, or again winding along the lower spurs, and across the valley beneath our feet. Only the parapet is of brick. Wherever the wall ascends the mountain side, its top is built in steps to aid the ascent of soldiers. Many of the towers are several stories high, and are provided with loopholes and arched windows.

The descent to Cha-tau is extremely rough. This is an ancient fortress, commanding the northern approach to the pass; and is surrounded with ruins of massive towers and arched buildings.

Here we entered upon the first of a series of mountain plains, fringed with loess terraces.

This remarkable formation, called loess, covers northern China and the southern semiarid border of the Great Central Asian desert zone.

In northern China, with a thickness of often many hundred feet, this formation covers valleys and basins, and, rising with sweeping curves, mantles the neighboring mountains to a height of several thousand feet. Traffic on roadways, breaking the texture of the earth, prepares its removal by wind, and the road sinks slowly between high vertical walls. The whole thickness of the loess formation is a soil of extremely fine grain, and is charged from bottom to top with fertilizing salts. The climate is

A ROADWAY HOLLOWED IN LOESS BY WIND AND WEATHER.
From Richthofen's *China*.

too dry to leach these more than is needed to nourish vegetation.

Loess is the basis of the prosperity of northern China. Being a self-fertilizing soil, it is inexhaustible.

In the rest of China the yield of the soil is wholly proportionate to the amount of added fertilizer, and, as there this comes mainly from the human body, the amount of human nourishment and amount of population are mutually proportionate.

Picking our way over the stony plain, we reached the walled town of Yu-lin. It was already sunset, and we rode into the courtyard of the first inn we saw. I had hardly dismounted when I remembered that I had stayed one night at the same house on a former journey. At that time the landlord had brought to me his son, a boy about eight years old, begging that I would cure him. I could not make out what was the matter with him, and should not have known had I been told. In vain I insisted that I knew nothing of medicine. The landlord, believing all foreigners to be physicians and sorcerers, still urged that I should cure him. Finding all protestation useless, I had left some simple pills, with very wise instructions as to how they should be used. The incident had entirely passed from my mind, and now recurred for the first time when I found myself again in the same inn. "Heaven protect us!" I thought, "if the child has by any chance died; for we shall have the whole town upon us in a mob." I thought the landlord looked very inhospitable as he showed us to our room at the head of the court. When he left I had begun to hope that he had not recognized his former guest. But before long the sound of many voices was heard, and the clattering of feet, which showed that the courtyard was filling.

Keeping my revolver near at hand I waited, not with-

out some anxiety, for whatever might be coming. Soon the door flew open, and a crowd of men and women entered; but, much to my satisfaction, they were preceded by the very boy in question, led between his father and mother. The child and his relatives immediately went down on their knees, and, knocking the ground several times with their heads, expressed in warm terms their gratitude to the "honorable and wise physician" who had performed this wonderful cure.

Now we were besieged in earnest. The fame of the cure had gone far and wide, and it did not take long to spread through the pretty large circle of suffering inhabitants of Yu-lin, the news of the arrival of two doctors. During a good part of the night, and until we left the next morning, our room was a hospital for the blind and the halt, the deaf and dumb, consumptives and epileptics, and many other kinds of suffering humanity. The doctor could of course do little, and left with fees in the shape of well-earned blessings.

At a small settlement, the first place we had seen without an inn, we had much difficulty in finding quarters for the night.

After applying in vain at several places we came to the most respectable-looking farmhouse, where we were also refused admission. There being no other way, we determined to take possession. The farmhouse was surrounded by a large inclosure, with a gatehouse having several rooms, and in one of these we established ourselves. Then came the efforts to dislodge us. First appeared the master of the house, who politely informed us that he had nothing for our horses, that the room was occupied by others, and that his family was on the verge of starvation. His well-rounded person and smooth face added no force to this protest. Then came, successively,

a number of men, who all protested and entreated, and finally departed with threats to rouse the population of the village against us.

Things began to look serious; but the worst was to come. The shrill tones of a troop of women were heard crossing the court. Headed by the lady of the house, they burst into the room and filled it not only with their persons but with invectives. My experience on the Yangtz' River had taught me that the hardest attack to resist would be a troop of Chinese women. As our best and only ally in the fight with the soldiers at Chang-sha had been the wife of our skipper — the woman who had turned the day in our favor — I now concluded that, as we could not fight women, we should have to give up our quarters unless we could make the women fight for us.

"Leave this house!" they said. "You are impertinent, red-haired foreign devils!" "You turtles' eggs!" "You cross between a drake and a toad!" "What right have you to come into people's houses when you are not wanted?"

It was certainly not easy to answer invocations made with so much earnestness. Opening our bag of silver, I rolled out the large, rough lumps of the metal, and, displaying them, said through our Chinaman to her who seemed to be the mistress:

"Madam, we wish to take nothing by force. We want little, will pay liberally for what we get, and leave in the morning."

The sight of the money had a soothing effect, and removed us from the suspicion of being lawless characters. The old woman then in a softer tone informed us that the room we were in belonged to her son, who was an "unfortunate."

"What is the matter with him?" I asked.

The answer was given by a bystander, who informed us that the young man was an idiot, who spent all his time in wandering about the country gathering pieces of stones. I carefully shoved the geological specimens which I had collected that day under a blanket.

Pointing to the doctor I said to the mother: "My good woman, this gentleman is a physician, and may be able to help your son."

The effect was immediate. The old woman bounded from the house, and soon returned, followed by a young man, a hopeless idiot.

The doctor told the mother that it was a case beyond his power, and that he could do nothing. He patted the "unfortunate" gently on the forehead, and from that moment the poor fellow insisted upon staying near his new acquaintance, every minute motioning to the doctor to put his hand again upon his head. This gentle treatment won the heart of the mother, and through her of every one in the house. Our horses were stabled, and a bountiful supper soon appeared.

The next morning we found ourselves besieged by all the suffering population of the surrounding country. The quiet farmhouse seemed suddenly transformed into a temporary dispensary for every form of disease. The patients were accompanied by friends, and in the tenderness and sympathy shown by these I read a phase of the Chinese character for which foreigners have never given credit to this phlegmatic race. The doctor did what he could by confining himself chiefly to diseases of the eye, for which he had brought remedies.

The people of the house showed their gratitude by steadily refusing pay, while others overtook us on our

way bringing offerings in the form of oats or hay, which they forced us to accept.

When, after an absence of six weeks, we returned to Peking, I felt that the time had come for me to leave China permanently. Mr. Burlingame and Sir Frederick Bruce suggested that I might well remain in China and enter the Customs Service. I might probably have a salary of $12,000. In one sense the suggestion was tempting. The Customs Service had been established under the direction of able Englishmen, and Robert Hart was then its head. The members were all carefully selected men, largely from the English universities. However, I preferred to live my life and career in my own land.

CHAPTER XXXVIII

FROM PEKING TO NAGASAKI

A Queer Adventurer

It was now the middle of May, and the season was already advancing beyond the period of comfortable traveling through the Indian Ocean and Egypt. This was the route I had chosen, after failing to find a companion for a journey through Siberia. Taking leave of my many kind friends at Peking, I set out on horseback for Tung-chau on the Pei-ho. The distance is only about twelve miles over the granite causeway that connects this port with the capital; but I lengthened the time of the ride by lingering at the bridge of Pa-li-kiao, the site of one of the last battles in 1860, where the Tartar cavalry, with miserable weapons, made a most desperate resistance against the allied forces.

At Tung-chau I found my baggage already on board the boat, which had been engaged by my temporary companion, a young missionary.

It may not be uninteresting to the reader to have a slight sketch of this person, whom, though in no unfriendly spirit, I must call a religious adventurer. While yet a boy, feeling himself called upon to become a missionary, he started without any credentials and without having been ordained. Enlisting as a marine, he went with the United States squadron to Japan, and there, leaving the service, began studying the language. Having

no means of support, he opened a tailor shop, and managed to eke out a subsistence, although, as I know by sad experience, he was apt to make one leg of a pair of trousers shorter than the other.

Failing in his attempt to convert the Japanese, he became a merchant and failed again, owing a large amount, in an attempt to overstock the China market with lumber. Determined again to become a missionary, in a new field, he went to Shanghai, and failing there to get a passport for the interior, proceeded to Peking.

During this time he had learned a little Chinese, and had determined to spread the gospel in the most inaccessible provinces of the West. He had obtained his passport, and was now on his way to Tien-tsin, the starting point of his journey. He complained bitterly that he had been snubbed by all the missionaries at Peking, who had even refused to allow him to pray in their evening meetings. On our boat journey, whether asleep or awake, he talked constantly, and always in Scriptural quotations, denouncing the missionaries as "sons of Belial," or complaining of his money losses, or yet calling down vengeance upon the Chinese if they should hesitate to receive his "glad tidings joyfully."

A monomaniac, he was about to undertake entirely alone one of the most difficult journeys on the globe, and was going undisguised through regions where, at the time, even the Catholic missionaries could hardly penetrate when disguised and always surrounded by their converts. I left him at Tien-tsin, after giving him my camp outfit, confidently expecting that he would never again be heard from.

"I am going to spread the Word of God in every department of every province of China," he said.

Several years later he came to see me in America.

When I showed surprise at his having come safely through his proposed journey, he exclaimed:

"I have done the work. I have been beaten and bruised and cut; I have been left for dead; but I have left the Word of God in nearly every department of almost every province in that heathen land. And now if they don't accept it, there isn't any reason why they shouldn't be eternally damned!"

His method of spreading the "Word" was to leave a leaf of the Bible in each place!

His career was remarkable. Starting with a cartload of Bibles, he traveled across Chi-li and Shan-si to the Yellow River. Here, coming upon the line of engagement between the Imperialist troops and the Mohammedan rebels, he was arrested by the former, and sent in a boat down the river to the seacoast. Not daunted by this rebuff, he started from Canton with another load of Bibles, and traveling through the southern provinces of China penetrated into the almost inaccessible region of Yun-nan, where he barely escaped death in several attacks of banditti.

The last time that I heard of him, he was circulating petitions through the United States for the pardon of Jefferson Davis.

The monotony of the voyage to Shanghai was relieved by one of my many narrow escapes. I was the only passenger. One evening as I sat smoking with the captain he leaned forward saying: "I smell smoke." I pointed to a cigarette burning among some paper in a spittoon. After a short time the captain exclaimed: "There *is* fire," and rushed to his room which opened from the saloon. And there was fire! In the rolling of the ship a towel swinging back and forth had caught on fire from a lamp. The fire had spread to the curtains around the

bed and from there to the many rolls of charts on the racks under the ceiling. All were ablaze and no time to call for help.

The captain tore down the slender racks, covered the charts with blankets and stamped on them. I threw water on burning woodwork, and trod the fire out of the remnants of curtains. It was a close shave. What was left of trousers between us didn't count; our skin would heal; but the ship was saved.

When I arrived at Shanghai my friend, Mr. Thomas Walsh, offered to make the journey homeward with me through Tartary and Siberia in the early autumn, a proposition which I eagerly accepted, as it was already late for the journey via India. Therefore I accepted his invitation to pass the summer of 1864 at the house of his brother, Mr. John G. Walsh, in Nagasaki.

Unfortunately, Japan was at this time shaken from north to south by its internal and foreign troubles, rendering it impossible for me to travel. But under the hospitable roof of my host the summer passed away pleasantly. Its quiet was broken only by the news of distant battles, and the rumors of threatened attacks upon the foreign settlements.

The political troubles rendering it impossible for Mr. Walsh to leave his affairs, the time of our departure was delayed until well on in October. In the meantime we made extensive preparations for a winter journey through a country of whose resources we knew nothing.

CHAPTER XXXIX

ON THE TABLE-LAND OF CENTRAL ASIA

With a Caravan of Tartars

At last we bade good-by to Mr. J. G. Walsh and other good friends, and sailed out of the bay.

After a period of delightful weather we came in sight of the Korean island of Quelpart, and entered the Yellow Sea.

During several days nothing of interest occurred, excepting that the sea seemed alive with immense numbers of medusæ. The great disks of these animals, of two feet and more in diameter, were everywhere visible, floating like drab umbrellas near the surface, and as far as the eye could penetrate the water. The vessel often cut a way through great masses of them, leaving hundreds of their broken forms in its wake.

For days we passed through this immense shoal of jelly-fish, which must have covered an area of hundreds of square miles.

We were not deprived of an opportunity to study the habits of animal life within the walls of our vessel. The brig had been for a long time in the tropics, and had become thoroughly infested with cockroaches. They seemed to rival in numbers the medusæ outside; the floor, the ceiling, and the berths swarmed with them. After throwing several bushels of them into the sea, we were forced to conclude that, in so doing, we only made room

for fresh and more hungry swarms from the hold. They were always first at table, turning up in every article of food, and sure to appear upon the most delicate morsels.

I had often heard that their favorite amusement was to gnaw off the toe-nails of sailors; and indeed, after my experience on this journey, I am ready to believe anything of them, even the assertion that they form the principal ingredient in India soy, as they certainly were largely represented in our food.

A violent storm prevented our rounding the promontory of Shan-tung, and drove us north between the coast of Korea and the peninsula of Lian-tung, where we lay for several days before we could enter the Gulf of Pechili and reach the mouth of the Pei-ho. At last we disembarked at Tien-tsin and forwarded our supplies by boat to Peking, making the journey ourselves on horseback.

At the capital we were so fortunate as to make an addition to our party in the person of Mr. St. John, Secretary of the English legation. While waiting for the preparations which our new companion had to make we passed our time in getting carts, which we had enlarged to admit of sleeping, and in having our clothes lined with fur. General Vlangali, the Russian Minister, kindly placed a Cossack at our service for the journey, besides supplying us with numerous letters of introduction for Siberia.

On the morning of the 12th of November, 1864, we left the hospitable gates of Mr. Burlingame's house, to set out upon our long journey across the table-land of central Asia, and through Mongolia, Siberia and Russia, countries of which no one of our party spoke the languages.

As the gorge of Nankau is impassable for carts, we had ours taken to pieces and packed upon mules, as were

all our supplies and baggage; it was quite a ride from the rear to the front of our long and straggling caravan. Stopping the first night at Sha-ho, we made an early start next morning, but before reaching Nan-kau Walsh's horse fell and sprained the ankle of his rider so badly that I feared we should have to give up the journey at its first stage, or take my friend back and leave him at Peking. But not daunted at the idea of making almost the longest land journey on the globe in a crippled condition, and disregarding present pain, Walsh insisted upon being carried in a chair to Kalgan, where our carts were to begin their work.

At Nan-kau Walsh bought a wooden chair, which, slung between two poles and carried by strong men, formed a very convenient means of traveling.

Four days' journey from Peking brought us to Kalgan. Here we were detained four days in perfecting a contract with the Mongols, who were to take us to Kiachta. As we were bearing despatches, the Chinese Government had given us passports for Tartary, without which it would have been impossible to obtain either guides or camels. On the 21st of November, 1864, at four o'clock in the afternoon, we left Kalgan in a heavy snowstorm. The ascent to the summit of the plateau being too steep for camels to draw the carts, this work was done by horses as far as Borotsedji, which we reached at daylight, having slept in our carts. Here we found our camels, twenty-six in number, including those taken as reserves in case of accident.

The first work was the organization of the caravan; the carts, of which there were four, one for each, including Peter the Cossack, were intended for sleeping-places, as it was our intention to travel seventeen hours out of the twenty-four, stopping only once to eat. The vehicles,

mounted on two wheels and without springs, were less than three feet wide and about seven in length, and were covered with a housing of felt. They were closed with a door on one side, and furnished with abundant blankets and furs, and fitted with pockets without number. The long shafts in front were slung in loops suspended from the saddle of the camel, and a guide mounted on another animal accompanied each cart. The baggage was packed

PRINCE.

CAMELEER.

Mongolian types.

on eight or ten other camels, each animal having its nose pierced and fastened by a cord to the saddle of the one before it, the foremost being led by a mounted cameleer. Tied to the back of each cart walked a sturdy Mongol pony always saddled and ready to be mounted.

The ascent to the summit of the plateau, here between five and six thousand feet above the sea, brought us into a region of intense cold, which was rendered almost unsupportable by a strong north-northwest wind. The thermometer, which at Kalgan had ranged near the freezing point, stood here at 4° F.

The wind, having a clear sweep over the plains lying between us and the Arctic region, blew with unbroken force, obliging us to take shelter in the carts while the

preparations were being made for starting. Finally, when all was ready, the cameleers, enveloped in masses of sheepskin robes, mounted their animals and formed into line. During the first two or three days our whole time was occupied in endeavoring to find the best means to keep from freezing to death, a fate against which I saw we had not taken sufficient precaution. After we were for hours in the carts, there would be not more than three or four degrees difference between the inner and outer temperature. Although the vehicles were an excellent defense against the wind, woolen blankets and furs became so cold that it was painful to touch them with the naked hand. It was not until the fourth day of our caravan journey that we were able to summon courage to face the fierce wind and clear cold. Sometime during the first night our route emerged from the flat-topped hills of the volcanic region of the plateau, and entered a country of gravelly plains, crossed by low granite ridges. Feeling a necessity for exercise we mounted our Tartar horses, and, leaving the caravan, galloped in the direction of a small column of smoke rising from the neighboring hills. Reaching the top of a small eminence we saw in the valley beneath us a collection of *yurts,* from which herds were moving away to graze. A loud and fierce barking of dogs showed that we were already discovered, and as we approached the encampment a score of these savage brutes offered us battle, and we should certainly have been worsted had not their masters come to our rescue.

I had taken the precaution to bring an empty bottle and a paper of needles, which we immediately presented to the good woman of the tent. We had not long to wait for her gratitude. Putting a cauldron over the fire, she threw in some mutton fat, and after this had melted, poured in a quantity of water, to which, as soon as it

had begun to boil, was added a liberal quantity of brick tea with salt and small pieces of the fat of a sheep's tail. When this was done, and a handful of parched millet sprinkled over the surface, the good woman served it up in lacquered wooden cups, putting into each one a lump of cheese, about the size of an egg. We stood almost aghast at the hospitable offering called forth by our presents: a decoction of tallow, tea, fat, salt, and cheese is certainly a formidable compound for a Western palate. But in spite of the way we reviled the mixture, in a language fortunately unintelligible to our hostess, the cups were repeatedly filled and as often emptied. Before we had left Mongolia, this Tartar tea had really become a favorite beverage with all of us.

When we came up with our caravan we found it already encamped, and we began cooking our single daily meal. We were in the habit of stopping about an hour before sunset, to give the animals a rest of six or seven hours out of the twenty-four.

One large tent answered for the whole party. In the middle the Mongols put up their tripod and cauldron, and another fireplace for our own cooking. We now spread over the country, one party in search of snow, the other to forage for argols (dried camel dung) for fire. It was not always an easy matter to find enough of either of these necessary articles for cooking. Soups were our great forte; to this all our energies were directed, and it was made the subject of experiments. Obtaining a kettle of water by melting snow, we first put into it such frozen vegetables as we had brought from Kalgan, and then such fresh meat — mutton, horse, or cow — as we could get from the Mongols, without being overscrupulous as to the manner of its death. Adding to these a pound or so of fat of the sheep's tail, allowing

the whole to cook, we put into the cauldron one tin each of peas, beans, ox-tail soup, mock-turtle soup, frankfort sausages, salmon, and tomatoes. How this compound would taste in civilization it would be hard to say; but no dinner at the Trois Frères, or at Delmonico's, ever disappeared with greater relish than these four o'clock meals on the steppes of Tartary. And they were well earned, for although we had to work hard in cooking them, we often had to work still harder to keep from freezing while eating them. The tent offered slight protection against the cold winds, and the argol fires gave no warmth at the distance of a few inches.

As it was only by rare accident that we were able to get a cup of Mongol tea in the morning, we studied various methods of keeping coffee in a fluid state during the night. The day of the thermos bottle was still nearly half a century off. So each of us took a bottleful of boiling coffee and rolled it carefully in a large blanket; then, thrusting the precious bundle under his fur cloak, each man rushed to his cart, and, diving under the bedclothes, carefully hugged his charge all night. Even a baby could not have been treated more tenderly. In this way we generally succeeded in having a bottle of iced coffee on awakening in the morning; but woe to the unhappy man made restless by an over-hearty dinner. His neglected bottle, to which he looked for consolation, would be frozen, perhaps burst, or, at the very best, the coffee was a mass of needles.

After traveling several miles in a valley we arose to the table-land on the opposite side. The country was here rolling, and evidently well covered with grass in summer. Hardly had we put up a tent before a number of women and children appeared with baskets of argols,

which they gave to our cameleers. The children had several strings of agates, which they parted with for some pieces of brick tea. The gift of the argols was not prompted by pure hospitality, as I had supposed.

While our Mongols were cooking their mess, the newcomers sat with eager eyes just inside the door of the tent. Our cameleers had a cauldron filled with large pieces of beef, which I strongly suspected of having belonged to the frozen carcass of a cow we had passed that morning. Almost before the meat was warmed through our men seized enormous pieces, and began the meal by cramming into the mouth as much of one corner of the piece as could be got in, and then sawing off the rest just outside the lips. Their throats seemed made of India rubber, so rapidly did one large piece disappear after another.

Indeed it is hard to understand why the Tartars are endowed with molars. Altogether carnivorous, they used their teeth, so far as I could discover, only for tearing off their food. Although most Mongols carry a pair of chop-sticks slung in their girdles, they can only be for ornament, as I certainly never saw them use them. In cooking, no part of the animal is lost, and they are not over-regardful of cleanliness in preparing their meat for the pot.

Every now and then our chief cameleer, taking from the cauldron a piece, generally one of the poorest, tossed it across the tent to the ravenous assemblage of women and children.

This man was a Lama, and had traveled not only through Tartary and northern China, but had been to the shrine of Tsongkaba, and had knelt before the Grand Lama at Lhassa. Fat, and with as jolly a face as even

a priest could wish, our good-natured Lama, while telling the beads of his rosary, or repeating the monotonous Buddhist formula, wore an expression of most perfect contentment and might have sat as model for a statue of Buddha in *Nirvana*.

CHAPTER XL

JOURNEY ON THE TABLE-LAND CONTINUED

Tartar Sheep and the Camel. Praying by Machinery

One morning we saw a herd of antelopes quietly grazing in the valley below us; but we being to windward they scented us, and were soon out of sight. After a further ride of two or three miles we came upon the object of our search, which, instead of being a large village, consisted of only two or three *yurts*. Still, we breakfasted luxuriously on Tartar tea and lumps of boiled fat of sheeps' tails. This part of the Tartar sheep is considered a great delicacy through all Asia, and is really almost equal to marrow. The tail of this animal in Tartary attains a weight of from thirty to fifty pounds, all pure fat. Seen from behind, the animal is all tail; and, when the appendage attains its largest dimensions, it becomes necessary to attach a contrivance by which the animal can conveniently carry his own tail without allowing it to drag. This is sometimes effected by a couple of sticks fastened at one end to the sheep, and spread out at the other, dragging upon the ground while supporting the tail. This growth of fat seems to be peculiar to the table-land, for it is said that the same breed, when taken to India, soon loses the peculiarity. It may perhaps serve the same purpose as the hump of the camel, that of

supplying in time of plenty an abundant store of fat, upon which the animal can subsist through a season of deep snow, when it would otherwise starve.

When the English troops occupied Afghanistan the soldiers became so partial to the tails of these sheep that they almost entirely discarded the meat. The result was a congestion of fat in the intestines, which caused mortality in the army. Fortunately, as our stay was short, we had not heard of this fact when we traveled in Tartary.

At Goshun we bought of the good woman of the tent a liberal supply of cream, put up like immense sausages. As it was frozen it was easily carried, slung to the saddle, without danger of being churned into butter.

We were obliged to go into camp several hours earlier than usual, in order to wait the return of our chief cameleer, who had gone to hunt for two camels which had strayed away.

Although secured by strings passed through the nose, the camel will sometimes tear out the flesh, and, once away from the caravan, will often give his pursuer a good chase. Still, the Tartar or Bactrian camel is far more docile than his brother of Egypt and southwestern Asia. Much larger than the Southern camel, he is provided with a heavy coat of long hair, and with two humps, which, after a season of grazing, stand great cones of fat upon his back, forming the most comfortable of saddles.

Most people are accustomed to associate the camel only with tropical climates. The Bactrian species is of little use during the hot season, while during the coldest winter it performs nearly all the labor of transportation in Central Asia. In countless caravans these patient animals traverse the frozen deserts of the table-land, and descend into the region of deep snows and intense cold of southern Siberia.

The spongy and pliable soles of their feet, armed with claw-shaped nails, are adapted only to walking over sand. Rocky or gravelly surfaces soon wear out the thick skin of the foot, while on mud or ice they find poor foothold.

Even in many parts of Mongolia the caravan routes are gravelly, and wearing to the camels, but in northern China, where large numbers of camels are used in transporting coal, their life is one of torture.

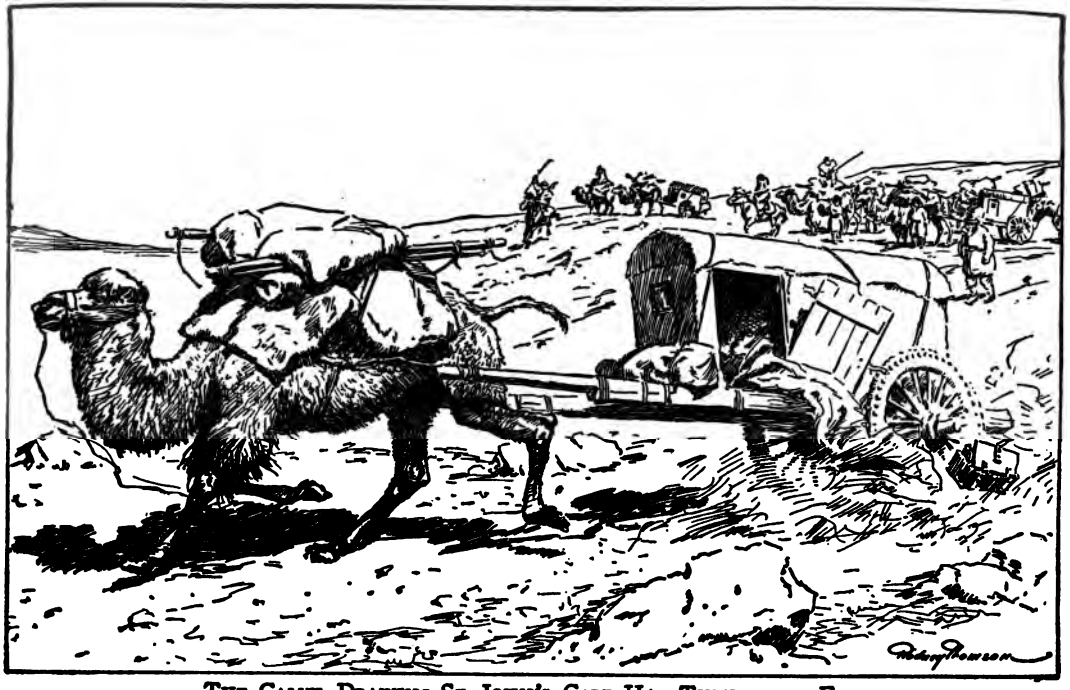
While waiting for the return of our Lama we witnessed the operation of resoling or rather patching the soles of a camel's foot, where a hole about an inch in diameter had been worn through to the quick. The animal was thrown on his side. His four feet bound tightly together, and his head tied back near the humps, he was held motionless. After the wound was cleaned out, a piece of softened raw cowhide was sewed to the skin of the foot, two or three stitches being taken on each side of the piece. The hind feet seemed to suffer most, and the operation had to be renewed every few days.

Although the thermometer was so low we experienced no inconvenience from the cold, partly owing to the absence of wind and partly to the clear sun. I doubt whether any one who has not wintered on the plains in the interior of a northern continent can appreciate the feelings which led the early inhabitants of Central Asia to love and worship the sun. Often in this journey, in traveling northward, facing the strong Arctic winds, with a thermometer at 10° and 20° F. below zero, while almost ready to drop from the saddle, owing to stiffness from cold, I have turned my horse to face the sun, and have felt in a few minutes the warmth of its rays stealing gently through my veins, like an influx of fresh vigor. The heavy icicles formed by condensations of the breath upon the beard would gradually loosen, and the ice slowly

disappear. How often have I then felt that, had I been born a nomad, I should have fallen down to worship the great light-giving god of day, as did the earliest bards, the authors of the Vedas.

For several days we had seen before us a mountain peak, which in the clear atmosphere of the plains seemed so near that we each day thought to pass it before night; but each morning it stood still beyond us, towering higher than on the previous day. On the afternoon of the sixth we approached the base of this picturesque height, which is called the Bogdo Oola, or Sacred Mountain. From a broad terrace, which forms its footslope, a large valley was visible in the southwest, threaded by a winding frozen river, the Russ Gol.

While crossing this plain an accident occurred which might have produced serious results. A cameleer in charge of the carts had fallen asleep in the saddle, and the animals, taking advantage of this, had strayed on to uneven ground, where they could browse, while lazily moving forward. In making a short descent one of the carts was upset, breaking one of the shafts. We all rushed to the spot, and while attempting to right the vehicle a violent altercation arose between the owner of the cart and the Mongol whose stupid negligence had caused the accident. The foreigner, finding that strong English produced no impression on the Mongol, endeavored to enforce his meaning by well-directed lumps of ice, which fell harmlessly upon the quadruple thickness of sheepskins which incased the cameleer; not so, however, when returned with increased force upon the simply woolen-clad foreigner. In self-defense the latter now drew his revolver. It happened that a considerable number of Mongols from the neighboring village were standing by, laughing at the unequal odds of the battle; but



THE CAMEL DRAWING ST. JOHN'S CART HAD TURNED AND FLED.

when they saw the pistol, they drew their long knives, to use them in defense of their fellow countrymen. The situation seemed to be growing very serious, when another matter called for the attention of all parties.

Frightened by the noise, the camel drawing St. John's cart had turned and fled. We could see the cart dashing at full tilt over the rocky plain, now swaying from side to side, now bounding high in the air. Soon the wheels left the body, and the contents of the cart were flying in all directions.

This turn of affairs was so ludicrous that even the owner of the cart could not help laughing lustily. But when it occurred to him that all his money, in gold, for the long journey through a strange land, was in one of the slender cloth pockets of the vehicle, the matter appeared in a more serious light. Twenty or thirty Mongols were already in advance of us, picking up the scattered articles, and there seemed no likelihood of recovering the money. When we reached the cart, we found the pocket torn and the treasure gone. It was of course natural to suspect our visitors of having appropriated the coin to their own use, and it was proposed that we should forcibly search them — certainly not a very easy thing to be accomplished with impunity by four foreigners, upon two score of Mongols, in the heart of Central Asia.

While we were discussing the matter among ourselves, a loud shout was heard from a strange Mongol, who was digging all alone some distance back in the track of the cart.

Hurrying to the spot, he pointed out a pile of shining sovereigns, which would have been an immense fortune to him, but which he had carefully gathered together out of the sand, in which they had been buried by the blankets dragging behind the cart, and which he triumphantly

handed over to the owner. Not one was missing. St. John rewarded the man liberally, and from that time we all of us had a higher opinion of the honesty of this simple people. Theft, I believe, is a thing of rare occurrence among them. They will over-reach in bargains, but the Buddhist commandment — "Thou shalt not steal" — is, perhaps, more generally observed than is that of our own religion in more civilized countries.

When, a few days later, the weather was very cold, — 20° F., with a strong north wind, it seemed as though we could not possibly reach Siberia without having some parts of our bodies frozen. Long and swinging icicles hung from the shaggy coats of camels and horses, producing a strange tinkling sound at every step. During this morning the ice accumulated on my beard until it hung in a mass nearly a foot long, and of no inconsiderable weight. Even the mouthpiece of my pipe became fixed in the ice formed on my moustache. Turning my back to the wind, a few minutes' exposure to the sun removed these icicles, but they soon formed again.

During the night of the twelfth of December we felt, from the motion of the carts, that we were going downhill, and morning found us descending a flat gravelly plain or valley, inclosed between hills from 300 to 500 feet high. We were leaving the elevated continental basin of Central Asia and descending among the mountains of its northern border. The sides of some of them were clothed with pine forests, which, though a novel sight to us, gave an air of gloom to the country.

Among these hills we came upon the sacred city of Urga. Urga, or Kuren, is the seat of one of the four or five living Buddhas, who, subject to the Dalai Lama, rule the inhabitants of Mongolia and Thibet. This Grand Lama was as usual a Thibetan, and only sixteen years

old. The palace in which he lived had a roof highly ornamented with gilded spires and balls. It was to Urga that the Dalai Lama fled from Lhassa when Younghusband invaded Thibet.

There was a Russian Consul at Urga, to whom we had letters of introduction. His house was a large, two-story building, constructed of logs, hewn to a plain surface, outside and in, well painted without, and with a carefully furnished interior. Before reaching the Consulate our chief cameleer rushed up to me and began to rub my face vigorously with snow. My nose was frozen, and he was thawing out the frost. I soon began to feel the effects. It was many days before I was freed from the pain and swelling.

Urga had a population of 16,000, of which one-half were Lamas (priests or monks of the Buddhist sect called Lamaism). On a walk through the city, we entered a large temple in which there was an immense image of Buddha, apparently of wood covered with sheets of gilded copper. The proportions are well preserved throughout the statue, and some idea of its size may be formed from that of the great toe, which was more than eighteen inches in length. In front of this temple there were many cylinders, or praying machines. The worshiper, setting one of these in motion, goes on his way with the assurance that every revolution of the cylinder turns out a large number of prayers for his benefit. Even the simple crank motion has been improved upon by the ingenious Lamas, who attach the cylinders to windmills and water wheels.

From a social point the influence of the humane doctrines of Buddha is most marked among the Mongolians, whose character they seem to have molded as much as Mohammedanism has that of the Kirgis tribes further

west. To-day we would not recognize in the Mongols the race which, under the leadership of Genghis-Khan and his descendants, overthrew the dynasties of all Asia and of eastern Europe, sending terror even to the shores of the Atlantic. This people, once a scourge of humanity, is now perhaps the most peaceable upon the globe.

The Chinese court, mindful of their struggles with these northern neighbors, has craftily taken advantage of the influence of Buddhism upon their character. The large number of priests (who are not allowed to marry) has operated powerfully in keeping down population. At present, in every family, one and often several of the males become Lamas at an early age. This immense army of drones lives, of course, off the substance of the remaining population. The Lamas pass their time in Lamaseries, or in roaming through Tartary and Thibet, serving the wants of the native superstitions, and practising all the arts of a crafty priesthood. The numerous festivals which take place at the monasteries attract immense crowds of the devout laity, who often return to their homes impoverished by the offerings of large herds and treasure which they have been called upon to make.

On the morning of the 21st, as we emerged from the forest on the northern slope, the Mongols called our attention to a group of houses and spires, which lay on the opposite side of a broad plain stretched out before us. This was the double city of Mai-mai-chin and Kiachta.

About noon we reached the former, which, lying on the Mongolian side of the frontier, was entirely Chinese in character, as it was also the principal frontier market town of the Empire. In traversing its narrow streets, between rows of Chinese houses, and threading our way among neatly-dressed Chinamen, we could almost imagine ourselves again south of the Great Wall.

Entering a large open place, we found several caravans, some encamped, others just coming or leaving, and after some little delay, in having our passports examined by Chinese officials, we were permitted to pass the wall which separates the two towns. One can hardly imagine a sharper line than is here drawn. On one side of the stockade wall the houses, churches, and people are Chinese; on the other, European. With one step the traveler passes really from Asia and Asiatic customs and languages into a refined European society.

CHAPTER XLI

SIBERIA

Christmas Festivities. From Kiachta to Irkutsk

Our first step after we arrived at Kiachta was to present our passports and letter to M. Pfaffius, Commissioner of the Frontier. From this gentleman and his wife we had a cordial reception, and an invitation to dinner the next day. The Russian Minister to China had kindly written in advance of our coming, and we found that M. Garnier, with whom I had traveled the previous year to Peking, had prepared quarters for us at the town of Troitzkozavsk, about four miles distant, whither we immediately went. It was no easy task to transform ourselves into the semblance of decent Europeans. For nearly six weeks we had been unable to make any change of clothes, and our only ablutions had been an occasional wash of face and hands with greasy soup, as a preventive against chapping.

Our long exposure to the intense cold of the plateau rendered the heat — usually 75° or 80° F.— of Russian houses almost unbearable. By opening the wind-wheel ventilators, which pass through the upper panes of the double-glazed windows, we reduced the temperature to forty-five degrees, but even this was at first oppressive. Soon after our arrival we were told that the bathhouse was heated. We were shown into an outer room and, after undressing, into another filled with steam. In one corner a large oven, containing a quantity of cobble

stones, had been heated for several hours. Into this a servant dashed a pailful of water, which, immediately becoming steam, filled the room. This process of bathing, which was at first so disagreeable as to be almost painful, we soon learned to regard as a luxury, and there is certainly nothing more refreshing. The next day, after paying the Mongols and discharging the Cossack, we drove over to Kiachta to dine with M. Pfaffius, and after dinner sat down to cards, the principal amusement of the country.

On the Russian Christmas day we drove over in the evening to dine with M. Pfaffius. As there is rarely enough snow for sleighing in this part of Siberia, south of Lake Baikal, the inhabitants rely altogether upon wheeled vehicles. This evening St. John and I drove alone. We had hardly gone over half the road when something happened that brought us to a standstill. While we were trying to repair the damage, we saw a group approaching us with evident interest. The bright moonlight, which lit the open plains far and near, revealed several wolves, which were rapidly approaching. Suddenly they stopped on a small eminence close at hand, as if to take a good look at us. Their large, shaggy forms, defined against the sky, were not pleasantly suggestive considering that we had neither arms to fight, nor means of getting away. Our memories recalled long-forgotten stories of Russian wolves, including that of the mother who saved the lives of herself and one or two children by throwing out of the sleigh, one by one, the other members of her family. Dashing toward the group, we waved our hands and shouted a duet, which took our visitors so completely by surprise that they turned tail and trotted off at a quick pace, stopping, after the manner of wolves, every few rods to look back.

The ease with which this victory was accomplished surprised us quite as much as our chorus did the enemy. We lost a long-cherished respect for Russian wolves.

During our stay at Kiachta we accepted an invitation from Major Muravieff, nephew of the former Governor-General, to accompany him to his headquarters at Kudara.

We arrived during a festival, and in the evening went with the Major through the village to see the amusements of the people. Hearing a sound of music and singing in one of the houses, we went in. In the unheated vestibule a shower of snow was falling, caused by the continuous condensation of the moisture which found its way through the cracks of the door from the crowded room within. Entering it we passed at once from a temperature of 30° F. below zero to more than 100 above, and found ourselves in an assemblage of Cossack men and women who were just beginning a national dance, and the three prettiest belles of the room were detailed to select us as partners. This dance began with a slow promenade of the ladies, who then separated and chose partners, with whom they marched up and down the room, each lady chanting the praises of her companion, winding up by kissing him on the forehead and on each cheek, and singing at the same time: "Therefore I will kiss him thrice, in the name of the Father, Son, and Holy Ghost," an invocation rather adapted to take away from the individual emphasis of the salutation. Then they separated, and the men in their turn chose their partners, and after praising their beauty and excellence, repeated the kissing, which seemed to be the chief purpose of the ceremony. The music and songs of the Cossacks were full of melody, though of a weird and barbaric kind.

The eve of the Russian New Year we spent at a ball, at the house of M. Sabasnikoff, the leading merchant of Kiachta. Here we saw so much refinement and elegance, as well as beauty, among the ladies that it was difficult to remember that we were in eastern Asia, and on the confines of Tartary. Here, too, we enjoyed the same dance which we had seen at Kudara.

We had been detained for nearly a month at Troitzkozavsk, waiting for Lake Baikal, 180 miles distant, to become permanently frozen. It was generally the middle of January before the ice formed to a thickness sufficient to prevent its being broken up by the winds. On the 15th of January we learned by telegraph that sleighs had already crossed the lake, and after bidding good-by to our many hospitable friends we started for Irkutsk.

Thenceforth our journey was to be made by post, and to facilitate our progress M. Pfaffius kindly furnished us with what were called crown passports, which were intended only for officials traveling on Government business. These papers insured the immediate furnishing of relays and horses, while travelers who had only the ordinary passport were subjected to constant delays and extortions.

The first stage of our journey brought us to the broad Selenga River, and on its frozen surface we traveled down the valley on sleighs. There is considerable cultivation in this valley, notwithstanding that the mean annual temperature is the freezing point of water. After two days and nights we looked to see the sun rise over the glistening ice of Lake Baikal. This great inland sea, more than four hundred miles long, is inclosed between mountain walls. Its opposite shore of cliffs, about thirty miles distant, seemed but an hour's walk, so deceptive was the clear atmosphere of this country.

The journey across the lake was the most exciting stage of our trip. At first we bounded at a rapid rate over the rough border, between great blocks of ice, whose transparent bluish-green gave them the appearance of aqua-marine. We came at last upon the smooth ice — a dark, glassy surface stretching away as far as the eye could reach. Over this the horses bounded at a terrific pace. We seemed to be gliding in some mysterious manner along the surface of a calm sea, and the strangeness of our situation was occasionally heightened by loud reports caused by cracks that are repeatedly forming in intervals in cold weather, cleaving the icy surface for many miles. We were several times obliged to make detours to avoid these, where they were either too wide to jump with the sleigh, or where one side had been raised two or three feet higher than the other. Upon the ice in the middle of the lake an enterprising Russian had established a restaurant, where we took a welcome dinner.

When we reached the opposite side we were detained for some time waiting for the moon to rise, as our road lay for several miles further along the shore of the lake, where traveling in the dark was not thought safe. By the time the moon rose a number of other travelers had collected at the station, and as we left terra firma we formed a procession of five or six sleighs. The one occupied by St. John and myself, being the lightest, was allowed the rather doubtful honor of taking the lead, to test the strength of the surface. The route was by no means free from danger. The water of the lake having sunk, the ice in many places remained without other support than its own stiffness; and the hollow sound which reverberated beneath us, as we passed over these places, gave a timely warning to those behind us but was by no means reassuring to us. Two or three times the cover-

ing broke and horses and sleigh went through, fortunately, however, in each case bringing up on a second sheet of ice, which had formed two or three feet beneath. These accidents sometimes happened in places where an under sheet has not had time to form. Few days passed without some lives being lost in crossing.

Daybreak found us traveling over the inhabited plains on the eastern side of the Angara River. Before noon we came in sight of Irkutsk, the capital of eastern Siberia. Here, also, we found that a letter written from Peking by General Vlangali had insured us a good reception. We were taken by our new friends to a large and elegantly furnished house, which we were told was entirely at our service.

At Irkutsk our party was compelled to break up. Mr. Walsh, having to continue his negotiations in St. Petersburg, left us about a week after our arrival, and made the journey with an officer who was traveling as courier. A few days later Mr. St. John left in company with our friend, Major Muravieff, who also traveled in the same capacity. Not being pressed for time, and wishing to stop at several points on the route, I remained behind, prolonging my stay in Irkutsk to nearly three weeks.

The political agitators of Russia, and of Poland, have long supplied Siberia with a superior element of involuntary population, and the refined society which the traveler meets with in the cities owes its existence in great part to this source. During my stay at Irkutsk, when the Polish rebellion was furnishing exiles by tens of thousands, the wives and families of the wealthier prisoners frequently arrived, ready to sign papers by which they condemned themselves to undergo the same life and hardships and complete isolation from the rest of the world, indeed to submit themselves and their children to

the same fate as their husbands and fathers, so long as these should live. The descendants of these exiles became firmly attached to the country and the attachment was even stronger with the peasant, who, next to his God and the Emperor, reverenced the soil of his birthplace.

In Irkutsk masquerades, the theater, dinners, and balls, at private houses and at the clubrooms, left little to wish for in the way of social enjoyment.

I was struck with one peculiarity of Siberian society, which, however, did not extend below the merchant class. This was the apparently greater amount of care bestowed upon the education of women. They seemed to be generally better trained than the men, not merely in music but in foreign languages and the general branches of education.

The two great evils of the country, which run through all classes, are gambling and drinking to excess. I know of no nation in which drunkenness assumed such frightful proportions as in this eastern part of the Russian Empire. During my stay in Irkutsk a gentleman told me, in illustration of this fact, that in one week, immediately after a reduction of the Government tax on spirits, thirty-five men and women in a village of 500 souls had killed themselves with drinking. Another instance, related to me by a Siberian lady, was that one of her female servants, having obtained leave of absence under pretence of visiting her dying mother, had gone directly to a drinking shop, where she lay four days in an incessant state of drunkenness.

I was told that in Kamtchatka the inhabitants are in the habit of using a fungus in their liquor, which not only increases the intoxicating effect, but has also the advantage that as soon as a man begins to get sober, a

glass of pure water will make him as drunk as before. It is said that in delirium tremens the Russian, instead of being tormented with visions of snakes and other animals, sees only little devils of the conventional type. "He has seen the little devils," is a common phrase in explaining that a man is in the last stages of drunkenness. Let us hope that the recent decree of prohibition may be successfully enforced.

Gambling seemed to be even more widely spread, since it pervaded not only all classes but both sexes. The Siberian ladies were great adepts at cards, a fact which my companions and I learned to our cost on the very threshold of the country.

During my journey I incurred a lasting debt to the Siberians for their hospitality. I could not help thinking that this was extended to me quite as much in my character of an American as individually. It was pleasant to meet everywhere an expression of the most cordial feeling toward the United States, and I was often surprised to hear, in this distant part of Asia, a very just appreciation of the causes and probable results of the Civil War, which was then going on at home. Everywhere there existed the strongest sympathy for the North, and a general good feeling had become widely spread by the accounts of the cordial reception which the Russian fleet had met with in the United States. The position occupied by the slavery question in our struggle had something to do in influencing the feelings of a nation in which the emancipation of serfs had recently become an accomplished fact.

CHAPTER XLII

FROM IRKUTSK TO OMSK

An Interesting Fellow Traveler

My departure from Irkutsk was delayed several days, owing to the difficulty of obtaining a comfortable *kibitka,* or traveling sleigh. This vehicle was of all sizes, entirely open, or with a hood behind, or completely covered; mine had a hood behind and the front part was decked over. It had only a single pair of long runners, and, to prevent upsetting, was provided with a guard frame, which, starting from the body of the sleigh in front, spread out some twelve or eighteen inches from the sides at the back end. As soon as the vehicle tipped, this framework touched the ground.

Every part of the *kibitka* was thoroughly braced, in a manner to secure the greatest possible strength as well as lightness, without too great rigidity — precautions which were absolutely necessary, since these sleighs were expected, before wearing out, to make several journeys of from two to four thousand miles, over roads that are anything but smooth, at the rate of ten and sometimes even fourteen miles per hour.

Expecting to travel alone, I waited until I found a very light sleigh, which was not much more than wide enough for one person, for which I paid sixty roubles — $30.

The postal service in Russia, considering the immense

network of roads it covered on both continents, was, in many respects, the most perfect in the world. In some parts of the Empire it was given under contract to private enterprise, but through Siberia it remained in the hands of the Government. Relay stations were established at distances of from eight to fifteen miles, under the charge of postmasters, whose duty it was to provide horses and attend to the mails.

Through the kindness of the Governor-General of eastern Siberia I obtained a Government order, which relieved me from anxiety; for it admitted of no delay, and required the furnishing of horses in preference to everything but couriers and the Imperial mail. The traveler was allowed as many horses as he was willing to pay for, at the rate of one and one-half kopeks each per verst (about one and one-half cents per mile), east of Tiumen, and west of that point at three kopeks each, about three cents per mile.

On the evening of the 6th of February, 1865 (new style), I left Irkutsk, and started on my lonely journey westward. Following the Russian custom, I had my baggage spread out over the bottom of the sleigh and covered with a quantity of straw, and placing over this a Japanese mattress and a number of fur robes, I secured a bed which was both soft and thick enough to deaden the shocks of rapid traveling over a rough road. A number of large pillows were placed at the back, to raise and support the shoulders and head; for the Russians have discovered that a half-reclining posture is the most convenient in traveling, since every muscle is at rest, and yet the elevation of the head permits a view of the surrounding scenery.

Having learned by our rough experience in Tartary how necessary it is to clothe one's self in the manner

which the natives of the country have found to be the best, I had taken every Russian precaution against the cold, and had prepared to incase myself in an outfit which I can recommend to travelers as a sure protection in the most extreme climate. Over a pair of thick and loose woolen trousers and a woolen shirt I put on the close-fitting robe worn by the peasants, reaching from the neck nearly to the ankles, and made of sheepskin, with the wool inside, and over this a loose robe of the fur of the Arctic fox, with the hair also on the inner side. My feet were incased in very loose boots of felt, reaching nearly to the knee. A Chinese skullcap of felt, with fur lappets, protected the head and ears, while a long, knitted muffler, covering the whole face below the eyes, after being crossed behind the neck and tied under the chin, protected nose, throat, and lungs. Before getting into the sleigh the traveler puts on over all his other garments a wrapper of reindeer skin, with the hair outside to break the force of the wind, and furnished with loose sleeves and a collar, which when raised envelops the head and face. Lying down and putting his feet and legs in a large wolf-skin bag and stretching them out under the deck, he pulls over him two big fur sleighrobes which reach nearly to the chin. He is now ready to defy the greatest severities of even a Siberian winter.

The cold, which had been increasing every day, seemed on the first night out of Irkutsk to have reached a more intense degree than I had yet experienced, and before midnight my hands and feet were nearly frozen. At the first station, by the advice of a traveler, I put dry hay between the soles of my feet and the boots, and was fortunate enough to find a woman with an ample muff, which I bought for a few roubles and found to be preferable to any gloves. After this, during the whole

journey, I never for a minute suffered from cold. The nose is always the most difficult part of the body to protect; but by pulling the comforter about an inch forward, and holding it there till it stiffens with the frozen breath, the whole face is kept warm by the heat of the breath.

Finding myself thoroughly defended against the severity of the weather, I now began to enjoy the wonderful night-scene which surrounded me. Three bounding horses carried the sleigh at almost railway speed, dashing in rapid succession through groves of trees, through fields and forests. A deep mantle of snow rounded and softened the surface of hills and valleys of an uneven country, illuminating the whole scene with the tender light reflected from its pure surface. Overhead the stars shone with flashing luster through an atmosphere whose purity is equaled only on the higher and dryer parts of the earth. After a time I allowed myself to yield to the call for sleep.

On awakening I was not a little startled at being unable to open my eyes. I found them perfectly sensible, but the lashes were frozen together and to the edge of the comforter. After fruitless attempts to force them apart, I enveloped my head in the collar of the outer cloak till the breath had thawed them out. At the station we reached before sunrise I got out for breakfast. Having been warned of the impossibility of getting any decent food outside of two or three large cities, I had taken an abundant supply of tea, coffee, and sugar. A lady sent me dinners for many days in the shape of sixty plates of soup, each one frozen into a separate cake with a ptarmigan in the middle, and from another lady I had received enough bread to last for several days. Almost every Russian house owns a samovar, or urn, for boiling water,

which is heated by charcoal in a tube extending from top to bottom. This was the only thing, excepting plates and glasses and other rough tableware, that the traveler could count upon in Siberia. The samovar was heated, and in a few minutes from the time of my arrival I had made a sufficient breakfast on six or seven large glasses of tea and a couple of slices of dry bread, and I adhered to this bill-of-fare during the rest of the journey. There is nothing so refreshing and so sustaining in a cold climate as good black tea. Its stimulating effect is both gentler and far more lasting than that of spirits. On the way from Kiachta to Irkutsk we had stopped to make tea at every station, and the temptation was very strong for me to continue the habit; but an easy calculation showed that a delay of half an hour at every relay would lengthen my journey by more than a week, and I resolved to confine myself to three stoppages daily.

The spirit thermometer outside of the station marked + 45° C., or 49° below zero of Fahrenheit, while within doors the heat could not have been less than + 85° or 90° F., involving a plunge from extreme to extreme which is not only uncomfortable but dangerous. In entering these station houses, it is necessary to leave in the cold vestibule the outer reindeer skin robe, as the low temperature of the fur would cause it to be drenched with the condensing vapors of the hot rooms to an extent that would render it as stiff as a board on reëxposing it to the outside air. I was now entirely among strangers. My only companions, the drivers, changed with their horses at every relay; and understanding as I did, nothing of the language, the long journey loomed up before me like an impracticable task, an endless succession of strange postmasters.

During the morning of the second day, just after I

had entered the yard of a station, the postmaster appeared, and to my delight addressed me in German.

"You are going through to Moscow?" he asked.

"Yes," I replied.

"Could you take a fellow traveler?"

"I have every wish to be accommodating; still it depends upon who the traveler may be, as you see my *kibitka* is meant for only one passenger."

"Oh! I will guarantee her sociability."

"Her? The traveler is a woman, then!"

"Yes, sir," replied the postmaster, "a young lady who is traveling westward on very pressing business, but her *kibitka* has broken down and I am unable to give her another. The only alternative she has, if you will allow her an alternative, is between traveling in your sleigh or in that of a Russian priest who has just arrived."

"How is it possible," I asked, with astonishment, "that any lady could hesitate in choosing between a perfectly strange foreigner and a holy man?"

The postmaster disappeared to gain some further light on this strange situation.

Now, in making a resolution to take the first respectable traveler I could find, I had made an express reservation against lady passengers; but here was a prospect of being wedged into a narrow sleigh, made to carry one passenger, I did not know for how many days and nights, with a woman of whose appearance or proportions I had not the slightest idea. It was certainly an alarming prospect for a bachelor. But before I had time for further meditation the postmaster reappeared. There was no getting out of it; and with the best grace possible, in my ignorance of her size, I sent the landlord to assure the lady that I should be delighted to have her share my sleigh. After her baggage had been carefully stowed

with mine in the bottom of the *kibitka,* and her own bedding distributed over mine, my fellow passenger appeared, but wrapped in such quantities of furs and so closely veiled that it was impossible to judge of either her age or appearance; but just before getting into the sleigh, she raised her veil to salute me, and perhaps also to take a good look at her traveling companion, and in doing so exhibited a young and attractive face. I congratulated myself upon not having adhered to a resolution which would have deprived me of so charming a companion. After traveling for half a mile or more, I broke the silence by some commonplace remark in German. My companion shook her head. "She speaks French," I thought, "all Russian ladies speak French;" so I repeated what I had said in that language. Again she shook her head. "Perhaps she understands Italian; the Russian ladies are great musicians, and generally study Italian." So I reiterated my attempt in Tuscan, and then in English, but each time there came that ominous shake of the head. I was now in despair; the idea of traveling for days, or perhaps weeks, with a companion, but without having a single expression in common was too aggravating to be borne. I knew one Russian word — that for horse. Leaning forward I pointed to the animals and called out *"loshada! loshada!"* The effect was electric. She saw that it was the only word between us, and the whole ridiculousness of our situation presented itself to her mind as it had to mine. After laughing she spoke for some time in Russian, and the ice which had threatened to separate us was at last broken.

My fellow traveler's strange history, which I learned in part from her, I will give as I afterward heard it more fully at St. Petersburg. This lady was the daughter of

a noble family of Warsaw, of which she and a brother were the only children. The latter had become an officer in the Polish army in the rebellion of 1863, and had been made prisoner under circumstances which caused him to be convicted and sentenced to life-long labor in the frozen mines of eastern Siberia. This punishment, which seemed to the aged parents and sister more awful than death, was rendered more painful by the fact that no communication could be held with the exile, who might die under the fatigues of the long and terrible journey across Asia. In order to give comfort and companionship to her brother during his journey, and to bring back news of his safe arrival, this girl, scarcely eighteen years old, formed the resolution to go with him, a point which she carried against all opposition. With a large number of political exiles and convicts of every class this young woman, who had hitherto seen nothing but the comforts of home and the gaieties of a brilliant capital, made the long and terrible journey, tramping for months through the snows of Siberia, exposed daily and nightly to the hardships and filth of the prison stations, and surrounded by scenes of suffering. She saw her brother arrive safely at Irkutsk where he was interned with others for several weeks before being distributed. Then, without waiting to recover from the fatigues she had gone through, she started immediately on the long journey to Omsk on some business connected with the exile's condition, and it was on this trip that the breaking of her sleigh threw her into my company.

Wishing to rest for a few hours at Omsk, I drove to a hotel and ordered dinner. During the meal a soldier arrived and demanded my passport. To my horror I found that I had probably left it behind, at some station. In its stead I handed over the Government order for horses,

and told the soldier that I was traveling from Peking to the United States on official business. With this information he departed. Before long he reappeared, stating that the chief of police had himself been in Peking, and would be happy to see me. Accompanying the policeman I proceeded through the city, and was brought into a large public building, and into a room which I instantly saw was a police court. About fifty men and women of the lowest class were standing in a row, while at a table there were seated several clerks, and an officer in the uniform of a colonel. After informing me that this officer was the chief of police, my guide went up to him and whispered something in his ear. Very much to my surprise, the man who had invited me on the score of having been in Peking merely looked up, and after a long stare went on with the business in hand. Not having been asked to sit down, I walked to the nearest chair and seated myself, but was immediately forced by a Cossack to stand up. Being indignant at this treatment I went up to the chief of police, and found that he understood neither English, French, nor German. After failing in the use of signs and the little I knew of Russian, a clerk who spoke German came forward. I explained the loss of my passport, and demanded to know why I had been brought thither to be treated as a common criminal.

The official became furious, and ordered me under arrest. As the prison-keeper started to take me from the room, I shook him off, and turning to the clerk said: "Tell the chief of police that I am bearing despatches from the United States Minister at Peking to my Government at Washington, and that he will be held to account at St. Petersburg for every hour I am delayed." The old man after some hesitation interpreted my language. The chief of police answered that he did not believe it; that I was

there without any passport, and had been traveling in company with a sister of an exile; in short, that he believed me to be a dangerous character. If I was carrying despatches why did I not show them. Taking from my pocket a large envelope addressed to the home Government, and bearing the seal of the legation, I handed it over to the official, who made a move to break the seals, but on second thought handed it back to me after merely examining the outside. I was now allowed to depart, though without any apology for the treatment I had received. This unpleasant episode was the only official annoyance that I underwent on the whole journey.

CHAPTER XLIII

ACROSS THE URAL MOUNTAINS

St. Petersburg. A Dream Proves True

My companion having stopped at Omsk, I was now alone. The country from this point on, and, indeed, the whole region of the Obi River and its tributaries, was much more thickly peopled than eastern Siberia. We were continually passing through villages where the streets were cut out of the deep snow, which had drifted over the roofs of houses. These Russian villages consisted altogether of log houses, generally not more than one story high. As the heavy frosts threw the buildings out of position, the older ones were often so inclined to one side that it was no easy task to cross a room where the smooth and greasy floor was sometimes at an angle of from ten to fifteen degrees with the horizon.

At Tiumen I remained over one day. Unfortunately the great fair, which is held here every year in January, was now finished, and the visitors whom I had hoped to see from many parts of Asia had departed. The only consolation I obtained for this loss was a dish of sterlet, a species of sturgeon peculiar to the rivers of western Siberia and to the tributaries of the Caspian. It is certainly the most delicious of all fishes, and is perhaps the greatest delicacy in the markets of St. Petersburg.

Not long after leaving Tiumen the road entered upon the gentle ascent of the eastern flank of the Ural Moun-

tains. This range is so low and its approach, especially from the east, so easy, that I reached Ekaterinburg without appreciating the fact that I was near the summit of one of the most celebrated mountain ranges of the world.

At Ekaterinburg I presented letters of introduction to Colonel Lenartzen, the director of the mint. A cordial reception induced me to remain for several days, in order to make some interesting excursions in the neighborhood. The first day was passed in visiting the mint, where only copper was coined, and afterward in the stone-cutting establishments belonging to Government and to private individuals. In the Imperial establishment were made the greater part of those vases, tables, and columns of lapis-lazuli, malachite, jasper, aventurine quartz, and porphyry which adorn the palaces of Europe.

On leaving Ekaterinburg I took in as fellow passenger a Russian who was going to Nijni Novgorod. Almost imperceptibly we reached the summit of the Ural Mountains, a fact which I should not have known had not my companion called attention to a small monument which marked the boundary between Asia and Europe. The descent on the western side of the range is much more perceptible than that toward Asia, and presents a great number of fine views over the valleys of the small streams which flow toward the Volga.

My companion was a true Russian. Every time that we passed a church or a cross, even though in the midst of conversation, he would suddenly stop and repeat a short prayer, while he crossed himself three times. The fear of missing an opportunity to perform this ceremony kept him constantly employed in spying out the church towers and steeples of towns we were passing through, or of villages lying off the road.

During the whole journey from Irkutsk I had passed

at intervals groups of exiles, but near the boundary of Siberia they were both more frequent and numerous. Made up of representatives of every class of society, from prince to peasant, these unhappy people dragged slowly forward on the long journey to the land of their imprisonment. A number of them were gathered around the monument which marks the line between Asia and Europe. The joy which I felt on seeing this sign of a rapid approach to familiar places and home was almost taken away by the thought of the widely-different feelings with which these exiles must regard what was to them an emblem of separation from the world and all that is dear.

We were now traversing a country in which the population grew denser, and the cities and towns more frequent, with every day's journey westward till we reached Kazan, in the valley of the Volga. I would willingly have stayed some time in this ancient capital of the Mongol Empire in the West. Its inhabitants were for the most part descendants of the Mohammedan subjects of the Khans, who still adhered strictly to their ancient faith, and ranked as the best elements of the population.

A journey of less than two days from Kazan brought me to Nijni Novgorod, then the eastern terminus of the Russian railroads.

Exclusive of stoppages at Ekaterinburg and Tiumen, I had made the journey from Irkutsk to this point in twenty-two days and a half; or, excluding the delays in changing horses and eating, I had traveled 3,112 miles in 352 hours, being an average of 8.8 miles per hour. The same journey was often made by officers traveling as couriers in fifteen days, through to Moscow before the railroad was built in Nijni Novgorod.

I had little time to make arrangements to take the

train, and was without the money to buy a ticket to St. Petersburg. I had a mattress of raw silk in a tick of heavy silk. Also three great robes, one of Arctic fox and two superb ones of Siberian bear. I had besides, a large ulster of raccoon fur, and another of the royal reindeer; and I had my sleigh. These things had cost several hundred dollars. The local dealers were robbers, and I was lucky to get enough money to pay my way to the capital. The mattress had been made of raw silk on the advice of Mr. A. A. Vantine, who had been a fellow traveler on the voyage from San Francisco. Many years later he told me that the raw silk in that mattress would sell, if I had it still, for $800.

When I entered the train I found Mr. Walsh's partner on the Russian-American Company negotiation, from whom I could have borrowed what money I needed, and have saved all my choice furs.

After arriving at St. Petersburg I found at our Embassy the first letters I had had from home for six months. One among them told of the death of an aunt, my mother's sister, who lived with us and was dear to all of us. This news was all the more startling in that it confirmed a dream which I had on my first or second night out after leaving Irkutsk on my journey. It was that I saw my father and mother standing in grief on the veranda of our house. I noticed the absence of my aunt and I drew the inference that she must have died. My mother's letter said that my aunt had died on the 7th of February. I left Irkutsk on the evening of the 6th or 7th. Owego is almost 180° west of Irkutsk, so when it was midnight where I dreamed it was noon at my home in Owego.

On my arrival in St. Petersburg I found a letter from Walsh telling me that he had left instructions at a bank

to accept my drafts on him for what I might need — an unexpected act of friendship, but in harmony with Walsh's generous nature.

My first visit was to the botanist Maximowitch, with whom I had had interesting excursions in Japan. He had now a most attractive wife, and was director of the Imperial Botanical Gardens. I never saw Maximowitch again, but fifty years later my wife and I were entertained in St. Petersburg by his daughter, Madame Lunin, at a dinner, with several eminent scientific men and their wives to meet us.

CHAPTED XLIV

TO PARIS AND HOMEWARD BOUND

On the train from St. Petersburg to Paris my neighbor was a Baron de Frantche — I think this was his name. He was going to see the heir to the Russian throne, who was then dying in Nice. This acquaintance we continued till we left Paris. We stayed for a night in Berlin at the Hotel de Rome; and in the morning I recognized my room as the one I had slept in when, five years before, I left Freiberg, in starting on my return to America and my journey around the world.

Arrived at Paris, I went to stay at a pension at No. 6 Rue Castiglione where Madame de Pailhez lived. Five added years had not changed my old friend. We played whist or went to the theater every evening.

I was again out of money and without a letter of credit. My trunks were full of things from China and Japan, so I invited to my room a jeweler from the Rue de la Paix, and sadly spread my treasures before him. He bought a superb fur of the sea otter, six snuff bottles hollowed out of crystals of aquamarine, engraved in low relief on the outside, and with stoppers of large rubies and sapphires — the only ones I had ever seen. He bought also a wonderfully carved box of rock-crystal. These things had cost me much, he paid many times their cost, but I would give treble what I got to have them again!

The next evening I met Mr. Walsh at Mrs. Bigelow's reception at the Embassy. Again I had sold treasures a few hours too soon.

I felt deeply the thought of parting from my old friend, Madame Pailhez, knowing that I should probably never see her again, for she was then, I think, well over eighty. She was one of those rare old women who retain their faculties and sympathies and interests to the last. In her youth she had seen the revolution and the change from the old régime to the new. She had married one of Napoleon's officers, and, after the restoration of the monarchy, had accompanied her husband to Peru, where, I think, he fought in the war of liberation from Spain. In more than one sense she contributed to my education. Her age and our close friendship allowed her almost unlimited freedom in our talks.

When I reached London I went to rooms that had been engaged for me by St. John, who gave much of his time to make my sojourn both pleasant and profitable. We then renewed a friendship that has lasted these fifty years.

My first thought now was to see Sir Charles Lyell. On my leaving Freiberg, six years before, Professor von Cotta had given me a letter to Lyell, which I kept by me through all my travels. I had studied all of his writings, and I thought of him with reverence.

I had made extensive geological explorations in Japan and China and on the table-land of the Gobi; and I had brought with me an outline of these, the results of the first geological work in the far East, together with my manuscript maps and profiles. During four years I had looked forward to talking these over with Lyell. Now that the long-looked-for day had come I drove with my material to the house and sent up my card. Lyell received me in his study. I said: "Sir Charles, I have carried for six years a letter to you from Professor Cotta. During this time I have spent four years in

geological explorations in Japan, China, and Mongolia, and I have thought that you might be interested in seeing some of the results, and possibly to give me some advice."

Sir Charles took the letter. As he read it, I saw his brow darken; then he got up and glaring at me, said crossly:

"You couldn't have done a worse thing than to bring me a letter from Cotta. He made a miserable translation of my book."

Then he sat down and turned to his work. That was all; it was a dismissal, and I left.

I had never received a rebuff. A feeling of humiliation was burned into my soul, when, instead, I should have laughed at the unmerited rudeness.

However, this experience was also a point in my education. It led me always to take helpful interest in the many who have come to me for advice, and especially in the young.

I sailed for home on the *Persia*. As Mr. John Bigelow, our Minister to France, had asked me to look after Mrs. Bigelow and the children I did not lack for pleasant companions on the voyage.

During the first part of the voyage the stormy weather had kept most of the pasesngers in bed, but as the sea quieted down the places at the table filled. One day at dinner the talk turned on the play at Wiesbaden, and the methods of playing to break the bank. I said that I was reminded of a story I had heard when dining at the St. James Club — that a man was pointed out to me as having run through three fortunes; that to escape arrest for debt he had got out of London in a balloon, and then to Baden-Baden or Wiesbaden, where he broke the bank three times and cleared ten thousand pounds.

While the people opposite me were laughing, a deep bass voice sounded in my ear from the left:

"Where did you say you heard that?"

I turned and looked aghast at the speaker.

"At the St. James Club," I answered, "and, my God! you're the man."

He laughed: "I didn't clear quite so much."

CHAPTER XLV

MANY OPPORTUNITIES IN MY HOMELAND

A Trip to the Lake Superior Mining Region

I found no longer the America I had left nearly five years before. The war had made great changes. The older people had aged rapidly through anxieties and excitement; the younger generation seemed imbued with a new energy.

The change was the greater to me because the molding period of my life — from the twelfth to the twenty-eighth year — had been passed away from home influences, and, for the greater part, away from the influences of American institutions.

I found myself about to enter on a life in many respects quite new to me. An era of speculation already existed, especially in connection with the exploiting of natural resources. The discovery of petroleoum in the East, and of the Comstock lode, and the rich returns from some other points in the far West, together with the high premium on gold and silver, had excited the national imagination. Promoters were everywhere offering shares in "mines" which were as a rule mere prospects or worse. Congress was giving subsidies and immense land grants to railroads and canals. "Get rich quick" methods were at work on all sides.

In mining, especially, there existed very few trained experts to develop mines and work ores or to protect intending investors.

In this condition of business I found no lack of professional opportunities. The Janins, busy in California and Nevada, urged the great chances in those fields. Requests came for examinations of mines in Arizona, then but partially safe, and in Mexico and Central America. I was asked to return to China to get concessions for mining coal. Professor Whitney offered a place on the Geological Survey of California. He was to spend the summer in Northampton, Massachusetts, working up the California report, and, before undertaking any professional work, I accepted his invitation to write there in his library the results of my Asiatic explorations.

I spent some happy weeks with my parents in Owego, and the rest of the summer and autumn writing at Northampton.

In August the National Academy of Sciences met at Northampton and, on invitation, I read a paper on my work in Asia. Here I made the acquaintance of several of the leading American men of science, whom I became able to count as friends.

In New York James P. Kimball, my fellow student at Freiberg, had organized a mining bureau to make reports on mining properties, and for this I made a professional trip to examine a copper property on Keweenaw Point, Lake Superior.

I don't remember how valuable my report may have been to my employers, but the experience I gained in visiting the copper region, its geology and its mines through much of its length, was ever after of great use to me. I saw things then that were no longer to be seen six years later, when, as State Geologist, I made the survey of the copper district. Miners were working fissure veins crossing the formation, in which were enormous masses of solid metallic copper.

In driving on the only road that extended through the great Keweenaw Point I was shown, near a solitary log house, a pit which was said to have been the discovery that led to the wealth of the Calumet and Hecla mine. The story was that the owner of the log house had missed a pig for several days. At last frequent squealings were traced to a hole between the roots of a large tree. A little work exposed a pit about six or eight feet square and as deep, into which the pig had fallen. The pit had been excavated in a hard conglomerate, and this rock was full of native copper. It had been the work of the forgotten race who had mined over the whole copper region of Lake Superior, including the distant Isle Royale. It is a fact that all the mines till then opened by modern miners were started by the indications given by ancient workings. Of the great number of "Indian" pits discovered, every one was in copper-bearing rock, while only a small percentage of modern prospecting pits showed copper. How these ancient prospectors were able so unfailingly to find the metal is still a mystery.

My way back to the East brought me to Marquette, in the iron region. Iron ore had been discovered several years before. Mining, smelting, and shipping ore had already become an active industry. Marquette with its neighboring ore-producing region was a busy oasis on the edge of a vast primeval forest, almost untrodden and, roughly, 500 miles long and 100 miles wide.

On the northern side of this wilderness, near Lake Superior, lay great iron and copper districts. On the southern edge, near Lake Michigan, sawmills were manufacturing lumber from the great pine trees of the neighboring region.

What I had seen of the copper and iron and lumber on the margin of this virgin country aroused my imagina-

tion, and I determined to explore its innermost secrets. So when I reached home my brother and I agreed to take what money we could put together and begin the exploration the next summer.

The United States Government had made large grants of land to the different states for agricultural schools, and issued to each state scrip to be used in selecting the land. Some of these states had sold this scrip, preferring the money to the land, and, while the regular Government price for land in Michigan was $1.25 per acre, the Agricultural College scrip sold in the market for sixty cents an acre. I saw in this a great opportunity.

CHAPTER XLVI

IN THE WILDS OF NORTHERN MICHIGAN

ABOUT this time Mr. Henry S. Welles came to me with a proposition. He and some other gentlemen had got through Congress two land grants to build a ship canal across the peninsula of Keweenaw Point on Lake Superior, intended to greatly shorten the distance for shipping from the western to the eastern end of the lake.

One grant was of 200,000 acres assigned as in railroad grants in checker-board fashion to consist of contiguous odd numbered sections nearest to the line of the canal. The other grant was 180,000 acres of odd numbered and 20,000 of even numbered sections. They could be taken in tracts of from forty acres upward anywhere on unoccupied Government land in the great region of northern Michigan from the east end of Lake Superior to near the western end. And to give time for the selection, all of the odd numbered sections were withdrawn from the market.

The company wished me to manage the selection of the lands of the second grant; the first had been already assigned by law.

I objected to accepting this proposal, which would prevent carrying out the plan I formed for an independent exploration. Mr. Welles replied that there was a vast amount of land that had been granted to the state, and that this, not being open to the company, would be open to me. He then asked what amount of

salary I would wish. I said $10,000, and he answered they would make it $12,000.

I agreed on condition that I should have an absolutely free hand as to all details and as to amount to be expended, to which he agreed, only they wished particular attention to be given to exploration for gold and silver. This I refused to have anything to do with, and I finally convinced him of the great opportunity that probably lay in the abundance of white pine and in the possibility of finding iron ores.

Early in May I began my duties at Marquette by studying the intricacies of the local U. S. Land Office records and plats, and by getting well acquainted with the Register and Receiver. At the same time I planned my scheme of work and organization. It was my intention to send into the great forest parties to explore for pine, each with an expert estimator at the head, with one or more experts under him. I reserved for myself the work of exploring for iron. As my assistant I had engaged Hermann Credner, who later became Chief of the Geological Survey of Saxony.

After getting all the parties off, I set about studying the geology of the Marquette iron district and the characteristics of the formation in which the ore occurs.

Then with Credner, and four Indians and two canoes, I started down the Michigamme River on an exploration for iron ore. Our provisions consisted of flour, baking-powder, pork, beans, dried fruit, salt, sugar, and tea.

The forest abounded in deer and beaver; the streams in trout, and the lakes in bass, pike, and pickerel, but we rarely attempted to get venison though we caught plenty of trout.

Our route at first was down the Michigamme River,

a stream flowing rapidly through a primeval forest, chiefly of maple, birch, oak, pine, spruce, and balsam-fir. Great trees hung over the banks which were often of moss-covered rock. The water, though limpid, was of the color of garnet, due to the action of organic acids on the vegetation and humus in the swamps from which the river was chiefly supplied.

We brought our canoes ashore long enough before dark to make camp and get wood for the night, and to cut boughs and thatch a thick layer of them in the tents to sleep on. The men always tried to find a large fallen dead maple tree to serve as backlog for a fire, then they cut logs about eight feet long; if the night promised to be cold they cut sometimes as much as a cord of these. The fire was then built about eight feet from the front of the tent, whose long open front and sloping back wall acted like the reflecting surface of a bake oven. Indeed in the winter work the parties often did not carry tents. Even when the thermometer would be far below zero they would spread boughs on the snow; and, making a leaning shelter of a blanket, would sleep warm in the reflected heat in the dense forest that kept off the icy winds.

In our expeditions inland we often had to cross great windfalls that marked the path of cyclones. For a width of half a mile, and along a stretch of many miles, the whole forest lay a prostrate mass of trees with their tops towards the east and their great roots rising high, and leaving the trunks often several feet above the ground. During the years a dense growth of brush and tall briars had grown up to hide the fallen timber, and to give shelter to hidden nests of hornets.

With packs weighing sixty to seventy pounds, it sometimes took us two days to make a half-mile across these

windfalls, never less than one day, from early morning till night. On one trip we had to follow the path of the cyclone for half a mile to cross a narrow deep river. Here the forest had been a very dense growth of tall, slender spruces. A fire had run through the fallen timber and burned the fresh growth of briars, as well as the branches and the bark of the trees.

The bare poles lay horizontal and were sound; and being firmly held by the roots, were a mass of parallel spring poles. We walked along these, keeping our balance in stepping across from the small end of one to the root end of its neighbor. Every man carried a heavy pack and a sharp ax. We had got along very well till suddenly a dense swarm of hornets rose from below. It was then every man for himself with hop, skip, and jump till we could stop, standing or fallen. Packs were dropped, and some fell between the poles. One man came near cutting his throat. In throwing up his right hand to save his balance, the sharp ax cut a slight gash in his neck.

Very often we saw the contributions of beavers to the stage of forest growth. There were ponds which they had formed by building dams across a stream at a carefully selected point. In some of these the beavers were still living in their "lodges" raised in the middle of the water. Small canals ran from the pond to the forest. One of these, that seemed to be freshly made, I followed to its source at the foot of a slope on which stood poplars. It was here that the beavers provided themselves with both food and materials to build their lodges and make and repair their dam. Tall trees, up to six and fifteen inches thick, were in process of being felled by the slow gnawing of gouge-shaped teeth. Others lay already fallen and cut up into short logs from the thicker trees, or

longer ones from the slender branches, all ready to float down the canal to the pond. The bark would supply food, and then the stripped wood would serve for construction. Truly the beaver was the pioneer lumberman and hydraulic engineer.

On a later trip in the region where pine was being cut to haul to the river we saw a corduroy road of heavy logs just built through a swamp bordering a beaver pond. The builders had cut the dam, drained off the water, and built the road. After a day or two the beavers rebuilt the dam, and the logs of the road were all afloat!

To return to our voyage down the river. At the junction of the Michigamme and Brule rivers there is a beautiful waterfall over twenty feet high, where I had a narrow escape from drowning.

From here we were on the Menominee River, and came upon several high and picturesque falls. In the ponds below these we sometimes found large turtles and sturgeon for supper. At last we camped at the foot of a fall sixty feet high, from where I proposed to leave the river to go north on an Indian trail to a lake.

In portaging our canoes and provisions to the lake we crossed a high ridge of limestone and an outcrop of quartzite in thin layers coated with films of specular iron ore. The northern slope, mantled with a superb forest of maple and beech, yellow birch and ironwood, descended to the ridge of the beautiful Lake Antione. Here we made a camp to serve as a point from which to begin the exploration of the immediate region.

I was elated at the thought that this great development of crystalline limestone might lead to important results that should justify my insistence on making a search for iron ore a principal element in the exploration. Of the importance of pine selections I had had no doubts.

I lay long awake till at last lulled to sleep by the distant roaring of the falls four miles away.

To begin as thorough a reconnaissance as possible, of the geological structure of the region, we traced eastward eight miles the limestone ridge and an accompanying line of magnetic attractions, finding, as well, some loose good ore.

During this study, as far as it related to the geology of the iron formation, we accurately outlined the part, east of the Michigamme River, of what is now called the Menominee Iron District; and we mapped the lines of ore formation. These lines lay along two massive limestone ridges between which nestled the beautiful Lakes Antoine and Fumé. The ore formation proper seemed to overlie the limestone.

Some great mines have developed here. I may relate an anecdote connected with one. A man, in Ohio I think, had failed and been stripped of everything. There remained eighty acres of wild land in the woods of Michigan that seemed not worth the cost of valuing. In time an explorer got from him an option for a lease and found one of the big iron mines of the world. It is related that the old gentleman used to sit all day on the dump watching the skips discharge and counting the royalty, "fifty cents, fifty cents."

Before the middle of September we had covered with the reconnaissance the whole area within the limits of the grant. Thus I was able to select a maximum of iron ore possibilities with a minimum expenditure of the acreage of the grant.

I now set out with a light bark canoe for a rapid voyage down the Menominee to its mouth, and thence by rail to Marquette. We started from a little isolated Indian settlement called Badwater. Here some Indians

had built several log huts in the midst of some hundreds of acres of fertile land — all of it, except three or four acres, covered with a grand forest. They raised some of the northern maize called "squaw" corn, and the women showed with pride some fine potatoes.

I had been there before, and they knew me, and when I appeared there now they exclaimed: "Bid-wey-wey-Gizjek! Bid-wey-wey-Gizjek!"

When I asked what they were saying, one of my Indians said that was the name they had given me. It meant "Sounding Sky."

"Why do they call me that?" I asked.

He asked the old man of the group. I saw an expression of sadness on the faces about me as the answer was given:

"These Indians try do same as white man. They make house and plant crop. They think they always live here. The land is good, heap fish, heap deer, heap beaver, and mink and marten, heap fur. Now they say they see you take all land. They think you take their land. Yes, they heap sad."

"Well," I said, "what has that got to do with the name they call me?"

"They think you thunder that come before storm."

So I was the "rumbling of the coming storm."

The tract was an odd numbered section, and I told him to tell the Indians that no one but me could take that during the next few years, and that I would not take it from them; and I added that I would try, if possible, to have it secured to them once for all.

They were very grateful. After a consultation among themselves an old squaw went off and came back with a gift. The group gathered near, as she proudly handed

it to me. It was a freak of three potatoes united to form a strikingly peculiar growth. The old man smiled, and the women, old and young, giggled. My interpreter said, "They say this bring you heap papoose." In return for the mascot I made them all happy with tobacco.

Down the Menominee was a charming paddling trip of about two hundred miles. The river often meandered through lowlands covered with large elms. We portaged around great waterfalls, and dashed down long and dangerous rapids, where only the skill of my Indians saved us from destruction.

One of these long rapids was especially difficult. It was full of large sharp-edged and sharp-pointed blocks of white quartzite. Only the greatest skill with paddle and pole could guide the boat safely through the intricate windings of the foaming torrent. A touch of the frail bark canoe against a jagged block might mean drowning.

I remember that at every critical point, in the "shooting" of these cataracts, I felt a stinging thrill on the soles of my feet. I had had this sensation before. In going carefully down the slippery surface of a smooth rock that sloped to the top of a high fall my moccasins slipped, and I narrowly escaped the fatal plunge. With the slipping came the stinging thrill; it was a physical expression of fear in the presence of imminent danger, and it lasted for some time after. While shooting the cataract it came when I was sitting on the bottom of the canoe with my feet stretched out at rest, and even when I was enjoying the excitement of the adventure.

My work was now chiefly at the Land Office. Some of my pine parties had arrived from the woods, and I checked their lists on the plat-books. Then I sent the

men, who had explored in the region east of Marquette, to reëxplore the lands examined by those who had ranged through the southwest, and vice versa. I followed this plan throughout 1867 and 1868. The result showed a rough conformity in the estimates, such as would necessarily vary with the personal equation of men estimating by sight without instrumental measurement. I detected fraud only once.

In the meantime the company had been preparing to dig the canal, and I was called to aid on the spot, which I had not yet seen.

The length of the canal was to be six miles. Of this four miles consisted in deepening the outlet at the east end of Portage Lake and two miles to be dug from the west end of this lake to Lake Superior. This western part lay about a mile and a half through a swamp; the rest, a half-mile or less, through a ridge of sand and gravel, rising to about thirty feet above lake level. My business was to determine the nature of the ground to be excavated.

My soundings showed the whole swamp to be a deep mass of liquid ooze. It seemed probable that the ridge could be traversed by dredges without meeting a bed of rock.

A contractor offered to build the canal for $80,000. I don't remember whether he included the harbor demanded in the Act of Congress. To me this seemed clearly impossible. The bid was rejected because the engineers estimated that the company could build it for $40,000!

So the company started on the track that led in the end to ruin. A mortgage for $400,000 on the granted lands had been made under the authorization of Congress, to raise the money to build the canal. When a million had

been spent, the company became bankrupt and it took $800,000 more to finish the canal under a receiver.

After starting the parties to explore for pine through the coming winter I went to New York to stay there till spring.

CHAPTER XLVII

A DUKE INTRODUCED TO "DEMOCRACY." VENTURES

In the spring of 1868, after a visit to my father in Owego, I again took up my work on Lake Superior.

During this summer the lists of the pine explorers of the past winter were checked by reëxamination, and the final lists forwarded to Washington, so that the whole floating grant, excepting some even sections, was certified by the General Land Office to the Canal Company.

In the meantime I was called twice to the works at the canal, and made flying trips to revisit the lands taken for iron ore possibilities, and other excursions to study in more detail the geology of the Marquette region. It was on these last that I took with me, as stated before in telling of the mouflon, the Duke of Würtemburg and his nephew. Among the stories told around our camp-fires I remember one told by the Duke. Some years before his uncle, Duke Paul, had traveled in the United States and had passed a night at a village in Wisconsin. The next morning he ordered a carriage to take him to a place several miles distant. While he was waiting in the office of the inn a man came in and, walking forward, slapped the Duke on the shoulder, asking:

"Are you the fellow that wants to go to Mayville?"

"Yes, I wish to go to Mayville," answered the startled Duke.

"Well, I'm the gentleman that's goin' to drive you."

On these trips the conditions were not always comfortable. We had some cold rains, and sometimes camped in swamps, and went across one narrow but soul-harrowing windfall. My guests had insisted that no change in my camping methods should be made on their account. And no one could have gone through the experiences with a better spirit of *camaraderie* and enjoyment than did this old man of seventy and his royal nephew.

The uncle seemed a good botanist, and had a good layman's knowledge of the geology of the period; and at the mines he took careful notes. Without appreciably interfering with my work he added to the pleasure of the excursions.

Autumn had begun and my work for the Canal Company was finished. At the last minute there came an order from the General Land Office in Washington affecting the first grant, with which I had had nothing to do. The enabling act which had authorized the grant had stated that it should be of lands nearest the line of the Canal. The department had now discovered that, to meet the requirement, sections covering 20,000 acres would have to be shifted. It was merely a question of making some changes in the boundary of the grant. So I set to work studying the plat books in the Marquette Land Office. I shifted the 20,000 acres of odd numbered sections so as to include the iron ore possibilities.

This was to become the great Gogebic iron range of which the Canal Company obtained about one half through its ownership of the odd numbered sections.

When, during the long panic that started in 1873, the Portage Lake and Lake Superior Ship Canal Company went into bankruptcy there began a series of Congressional hearings and cases in the courts, in some of which

I had to appear as witness. The lands were to be sold under foreclosure of the several mortgages. The holders of the mortgage bonds insisted on a sale of all the lands in one block. The company fought for sales in parcels. They rightly claimed that in the then existing financial depression a sale *en bloc* would be ruinous, and that by selling in parcels much might be saved of the immense excess of value of the property over the debt. I testified that they should average seven dollars per acre in quick sales of parcels. Mr. J. M. Longyear put them at $2.50.

As a matter of fact the records show that the pine alone on 186,506 acres has been sold *standing* for $5,945,-384 — an average of $31.88 per acre — while, by 1915, more than $10,000,000 had been received in royalties from the iron mines on the grant. So I felt justified in having insisted on exploring for pine and iron ore instead of for gold and silver.

My experience during this work for the Canal Company confirmed me in a decision I had taken on my first visit to Lake Superior. This was that instead of putting any savings I might be able to make into life insurance or savings banks I would invest them in Government lands carrying timber, and in lands having the iron ore formation, whether merchantable ore showed on the surface or not.

I had on my first visit become acquainted with Major Thomas Benton Brooks, and, now that I was free, I told him my plan, and proposed that we should join in buying lands on it. This led to an informal association that lasted nearly forty years. There was no written contract that I remember, only a verbal arrangement to invest jointly such money as we then could spare, in such lands as either of us should think desirable.

Our first joint work was to quickly trace the Marquette

ore formation west from Ishpeming along the northern edge of the basin, using the dip needle, and trying to locate the southern limit of the granitic area. After having traced a line of magnetic attractions several miles beyond Lake Michigamme, we sent J. L. Spurr to explore carefully for ore outcrops along the line. He was to have a third interest in anything of his finding that we should buy. At the same time we sent Jack Armstrong down into northern Wisconsin to explore for pine and for iron on the possible western extension into Wisconsin of the Lake Antoine iron formation. Spurr came back with specimens from a large outcrop of rich magnetic ore. I wrote to the owner, a Mr. Williams, near Syracuse, N. Y., for a price. He answered that he knew the tract contained iron ore, and he would sell the 160 acres for $8,000, if paid by a given date, which we agreed to.

I went at once to New York, and from there, with $8,000 in legal tender bills, I took a night train for Syracuse. The porter woke me at three o'clock saying I had five minutes to dress. On my way back from the wash room my foot hit something on the floor. The car was very dark, but, thinking some one might have lost something, I spent valuable time in searching for the thing. It was my roll of $8,000! It was a case of rewarded altruism.

After delivering the deed of sale Mr. Williams told me that a Mr. Palmer of Michigan was interested with him in the property; and soon Palmer wrote to Major Brooks that Williams had written him about the sale, that he had known that the land contained valuable ore, and that he hoped it would prove to be very valuable. All of which seemed very nice. However, when the discovery came to be much talked of, Mr. Palmer entered

a suit to recover a third interest in the property, and he won out in the lower court. We appealed to the State Supreme Court, where three judges out of five decided against us.

It was my first experience at law, and it was a very valuable and never forgotten object lesson; but it delayed development of the property for nearly three years.

At last we organized the Spurr Iron Mining Company, issued stocks and bonds, and began to open the mine. The ore body promised to be large, the railroad was extended to it, and we began to ship ore. This was, I think, in 1872.

Among the owners of stock and bonds were Brooks and I, Mr. Moses Taylor, and a Mr. Morgan — an Ohio ironmaster. The bonds were made to run one year. By 1873 we had shipped over 100,000 tons of ore, but as it was evident that we should not be able to pay off the bonds at maturity we all agreed verbally to extend them another year.

Then something happened. In a letter to Mr. Norwell the secretary of the company, Mr. Morgan, had expressed some difference of opinion on some mining or selling question. Mr. Norwell, in his reply, had written that he thought Mr. Morgan was really "hypercritical." Thereupon, without any notice, Mr. Morgan entered a suit for foreclosure of the bonds! Which showed an equal weakness in temperament and vocabulary. It would have been funny if it hadn't been effective.

The Jay Cooke panic, coming on top of the difference between *hypo* and *hyper*, smashed the Spurr Mining Company.

To go back to the autumn of 1868: Jack Armstrong, our faithful and efficient "timber cruiser," returned with a list of vacant Wisconsin pine lands, incidentally carry-

ing indications of iron ore formation. We bought undivided interests in several tracts having "iron chances" with timber. Within a year we had a scattered holding of a considerable number of thousands of acres. The time for getting lands with more than a very moderate stand of pine had, however, passed.

CHAPTER XLVIII

I WRITE AN ACCOUNT OF MY EXPERIENCES. MORE VENTURES

In the autumn of 1869, I entered through marriage with Miss Eliza Shepard into a new life that lasted for many years — a relation of happiness clouded only by the death of two children.

The following winter I lectured at Harvard on ore deposits. I also finished the manuscript of *Across Asia and America,* and, with the help of my wife, prepared it for publication. The book appeared in 1870 and went through at least nine editions. It has long been out of print, but, I am happy to be able to say, not out of memory; for even until now (1916) people who were then young or middle aged often introduce themselves on the strength of having enjoyed reading it. Some recall the adventures in Arizona, some the episodes in China or Japan, while my romantic ride through Siberia especially attracted others.

The Government of Michigan asked Major Brooks and me to make jointly a geological survey of the state. Brooks took the iron district, and I the copper region of the upper peninsula. Major Brooks had already brilliantly worked out the geology of the whole Marquette district, so I turned over to him all the notes of my explorations in the other parts of the upper peninsula to use as clues.

I had as assistants Archibald Marvin, my former stu-

dent, and Luther Emerson, who did the surveying. The results of the surveys and description of the beds of the copper-bearing zone were published in Volume I of the State Geological Survey in 1873. Those relating to the occurrence of copper appeared later.

Late in autumn, a few days before leaving, I was on crutches. In cutting out a transit line I undertook to show the axeman how to cut a sapling. The double-faced axe was new to me, and at my first stroke the thing flopped over and cut deep into my instep, sending up a veritable fountain of blood. Fortunately I was able to direct the stopping of the flow by twisting a bandage, and there were enough men to carry me four miles through the woods to the wagon, and get me to a surgeon. Near the wagon were several miners' houses. We were soon surrounded by Irish women, whose sympathy showed itself in a loud wailing that reminded me of the Corsican *lamento* over a victim of the *vendetta*.

In 1871, after a winter devoted to lecturing at Harvard, I returned to Lake Superior to capitalize the experience I had gained there.

Mr. Quincy Shaw and Mr. Alexander Agassiz agreed to my proposition that they should supply the money to buy lands, and that I should have the right to buy a quarter interest in these lands at cost. The purchases were to be confined to lands carrying pine, the iron formation, hardwood, and sandstone. Hardwood was then very valuable for furnaces making charcoal iron, and the Lake Superior brown sandstone was in great demand.

My wife wanted to go with me, and I felt that the out-of-door life might hasten her recovery from a serious illness. So as soon as she was able to travel we went to Marquette. I bought a bark canoe and hired a large sailboat and skipper and two Canadian voyageurs, one

of them, Henri Ledouceur, with his educated Indian wife, Priscilla. These, with two tents, supplies, guns, fishing tackle, and abundant township maps, formed the outfit.

On a beautiful summer day we sailed out of Marquette harbor. As far as Portage Lake the south shore is formed by cliffs of the brown sandstone, some of which I hoped to find worth taking. Two weeks or more were spent in exploring this shore, and canoeing up the streams. The scenery was of unending charm.

Sometime in October we reached Bayfield in Wisconsin, where there was a U. S. land office.

A sail across the bay brought us to the mouth of the Montreal River. It was my intention to take my wife to the point where we should meet Major Brooks, and begin our exploration, and to leave her there in a stationary camp with the Indian woman Priscilla and her husband. As she was not yet strong enough to make the journey through the woods on foot, Indians were engaged to carry her in a hammock swung on a pole.

Around their campfire, that lighted up the dark recesses of the forest, these Indians were a picturesque group. Their leader wore a decorative name. We liked the sound of it so much that it caused him more than his share of work. It was *Jin-go-ben-e-sic* — War Eagle.

Henri and Priscilla made a delightful stationary camp in a stately forest and near the river. In a large tent, with one side open to the air, they made a thick, soft bed of carefully thatched hemlock boughs, and arranged all the possible conveniences for a prolonged stay. Their own tent was put up close by the large one. There were abundant provisions, and Henri was an expert in getting game and trout. As both Henri and Priscilla were devotedly attached to my wife, I felt that I was leaving

her under health-bringing and happy conditions, for she loved the primeval forest in all its aspects.

During the previous winter I had read Whittlesey's account of the occurrence of magnetic ores in northern Wisconsin, which seemed to be possibly a continuation of the formation we were to look for in Michigan. So we had agreed that Brooks should begin on the Wisconsin side and try to trace the formation to our meeting point near the state line.

We decided first to try to trace the iron formation through to Lake Gogebic, about thirty miles distant, and then to examine it more carefully on the way back. It took us more than two weeks to trace it to the point where we lost it west of Lake Gogebic. What we saw was very discouraging. There really was a continuous iron formation resting on quartzite, and this on granite, but it was totally unlike any that we had seen. By the time we were ready to return, a foot of snow had fallen, making hopeless any further examination.

One morning, on the return journey, as we reached the top of a high hill, Jingobenesic startled me. He pointed to the southeast. Far away above the forest there stood a wall of dense smoke. It rose high in the sky, and stretched along many degrees of the horizon. It clearly meant an overwhelming conflagration — one that threatened destruction to everything in its course. We could not judge of its distance, but I thought of my dear wife in the heart of that vast forest, and twenty miles from the lake and safety, and it would take us nearly two days to reach her camp!

While I was hurrying forward in this anxiety, we met a messenger bringing a telegram and letters. He had been sent on from the stationary camp, and brought news of the great forest fire in Oconto County, Wiscon-

sin, that was destroying whole villages and their inhabitants. The fact that it was more than 200 miles off and to leeward relieved my anxiety. Early in the morning, before reaching the Montreal River, I left the blazed trail, and climbed a high hill to look towards the wall of smoke. The hill was on the quartzite of the iron formation. It commanded a grand view over the great forest that, extending around Lake Superior, stretched away to the north, to gradually dwindle to the stunted vegetation of the Arctic zone.

I sat long trying to solve a problem of duty. I had received a telegram the day before disapproving my large purchase of pine land. I now felt that I should be criticized for buying a large amount of iron land of which I could not speak with more confidence than I could show in the case of a formation so different from any known on Lake Superior.

While thus thinking I noticed numerous yellow stains of limonite in the rock. What is luck? Those yellow spots! They determined my fortune. I knew they probably had no important significance, but there was a remote possibility that they meant concentration of iron oxides in the overlying formation. I decided to take for the pool, at least this tract, about two miles long.

I found the stationary camp abandoned. It had been left at least two days or more.

We followed a well-marked trail made in the snow by the party in moving towards the mouth of the Montreal River. It was after midnight when we reached the lake and found the camp.

In the bracing air, and under the devoted care of her attendants, my dear wife had recovered her strength. Priscilla had enlivened the time by telling Indian legends and tales of the wars between her people and the Eski-

mos, for she came from the North, and she had taught her mistress how to make and embroider moccasins. A hammock-stretcher was no longer needed; in spite of the snow, the trip out was made on foot.

At Bayfield I found a letter from Agassiz objecting strongly to the purchase of iron lands.

We took passage on a propellor to Marquette. It was the last trip of the season, and the boat was crowded with quarrymen, nearly all of them drunk.

Soon after leaving these men became so uncontrollable as to produce a serious situation, for they were overcoming the crew. The captain got out the hose and was beginning to play it on them when, on emerging from among the Apostle Islands, we came into a choppy sea. This quickly settled matters by leaving the floors covered with very unsettled victims.

At the land office in Marquette I again faced the problem that had sorely troubled me on the quartzite ridge in the woods. On the books the even numbered sections were all open for entry. From my notes I could cover all the iron formation along twenty miles of even sections. Under ordinary circumstances I would, without hesitation, have taken the risk. However, since that telegram about pine lands, and Agassiz's letter, seemed to show lack of confidence in my judgment, I preferred not to invest in lands on an iron range of which I could not speak with some confidence. As I shall show, I missed the opportunity of a lifetime. I was, of course, debarred from buying with my own money. Still I bought, on the joint account, two miles of the range adjoining the quartzite ridge. Those two miles now form the Newport and Geneva mining properties. They have produced till now (1915) 12,000,000 tons of ore.

Two or three years later a miner by the name of

Moore, thrown out of work by the panic of 1873, was employed in looking for pine. There wasn't any pine land in the region. He sat down to smoke and curse his luck on a hill several miles east of the land I had taken. At his side rose the upturned roots of a great tree that had been felled by a recent storm. Where its roots had been there was exposed a smooth surface of black rock. Lifting a piece, Moore found it very heavy, and, being a miner, he knew it was not ordinary rock, though he had never seen anything like it, so he put it in his pocket as a curiosity. An assayer found that it was a very pure bessemer iron ore. Moore raised money to buy the tract, which became the Colby mine, and long before I heard of the find all the even sections, excepting my purchase, were taken up. Thus was started the great Gogebic iron range. Every section along it is dotted with mines which, together, have produced, up to 1915, over eighty million tons of bessemer ore.

In the autumn of 1871 I was offered the position of State Geologist of Missouri. I had been led to expect political interference from the Governor, then Gratz Brown, and from the Legislature. Instead of this I had only cordial support.

On my trips I found the farmers always hospitable and generally, too, interested in the survey. They had one custom I had not seen elsewhere. There was almost always a basket of turnips at hand, from which you were expected to take at least one and eat it raw.

On my trips in the winters I suffered far more from cold than anywhere before or since. I remember a Thanksgiving dinner at a hotel in Fredericksburg where all the guests seemed to think it quite natural to have no

fire in a room in which the mercury stood below zero Fahrenheit.

In the winter of 1872-73 a severe enteric disease and an attack of meningitis so affected my health that I resigned and removed to Balmville, four miles north of Newburgh, N. Y., to prepare the results of the survey for the volume that appeared in 1873.

CHAPTER XLIX

WRITING, RESEARCH, AND FARMING. CENSUS OF MINERAL RESOURCES

I NOW spent several pleasant years in writing and research work. After completing my report of the Missouri Geological Survey, I made a special study of the relation of the native copper in the trap rocks of northern Michigan to the other minerals in those rocks. For much of this work I had to cut from rocks, for study under the microscope, sections thinner than the thinnest tissue paper.

I reviewed many scientific works, among them Richthofen's *China*. In this work the author clearly proved that the fine self-fertilizing soil of northern China, of which I have written in a previous chapter, is a wind-borne soil. I had supposed it to be a soil deposited by water. But his demonstration that it was wind-borne was convincing.

Near Owego, my birthplace, whither we had moved in 1876, a short time before the death of my dear father, I tried my hand at farming. This was against my wife's advice, and she was right, as usual. I sold land and stock, when, after a number of set-backs, I found that our "honest" farm manager owned a farm nearby and carted thither all the manure from ours.

In 1879 the government decided to turn the census of mineral industries over to the Geological Survey, and I

was asked to take charge of this department, exclusive of the precious metals and mineral oils.

I got permission to have my place of official residence and offices at Newport.

Having a free hand, I decided to lay special emphasis on the iron ores as underlying the fundamental industry of civilization. The census of the other minerals could be confined largely to the usual statistical methods. My plan was to have every mine and every known outcrop of iron ore, from Canada to the Gulf of Mexico and from the Atlantic to the Pacific, examined geologically, and systematically sampled for chemical analysis.

Within two months the whole organization — personnel, instrumental equipment, and the methods, down to the special notebooks — was in order, and the assistants in the field. During two years there poured in a steady stream of iron ore samples in groups of five-pound bags, each one accompanied by description and geological diagrams of the occurrence. And they all came by mail under government penalty label for postage, causing much of whom, supposing them to be precious metals, kept them guarded over night.[1]

The report, including an exhaustive discussion of the iron ore resources of the country, with about 1,000 pages and 102 plates, made up the fifteenth volume of the Tenth Census.

The assistants in the field told many humorous accounts of the customs among the primitive people of the mountains of the South. After supper at one house Bailey Willis sat with the family smoking and talking consternation to the postmasters of country offices, some

[1] Professor Charles Sargent, who had charge of the Forestry Census, even sent as mail matter a section of a California big tree long enough to require two flat cars.

before a large fire. There was only one room, and no beds. Willis wondered where they slept. There were several big logs standing against the wall. At last the host knocked the ashes from his pipe. He took down the logs. They were hollow, and were the beds.

On one of my trips with one of the assistants we passed a stormy night in a miner's house in the Virginia mountains. We ate supper in a room where five boys and girls down with measles lay across one bed, and another lay in a cradle that was too short. There were present also several miners.

In order to keep the size of this book within desirable limits, it will be necessary to omit accounts of many to me interesting experiences between 1881 and 1915. These may be read in my *Reminiscences* (published in 1918) by those who care to know more of my life story.

Included in those years were: occurrences connected with the organization and direction of the Northern transcontinental survey of a route for the Northern Pacific Railroad which would give readiest access to the natural resources, especially coal, of the regions to be served by the road; adventurous journeys to examine mines in the Sierra Madre mountains of Mexico; home life under delightful circumstances at Dublin, New Hampshire, and at Roseland in southwestern Georgia; trips with my family to Europe and northern Africa; and, especially, two seasons of exploration and, excavation for the purpose of studying the prehistoric life of man in Russian Turkestan.

It seems to me almost like deserting my own children not to tell the story of these and of other events of my life here; but publishers are inexorable with writers in matters of space, and this no doubt because the reading public

is inexorable with publishers as to the size of books intended especially for the general public or for juvenile readers. With this explanation to the reader and apology to my own sentiments, we will proceed to the next and last chapter. Therein will be told the story of a visit to the desert region where, as a young man, I experienced my most thrilling adventures.

CHAPTER L

AFTER MANY YEARS

A Visit, not without Adventure, to the Scene of My Most Thrilling Adventures

Early in March, 1915, with my children, I was on my way to Arizona. In the shadow of loss of my wife and mother, we sought the healing influence of the desert.

For my children this journey was a pilgrimage to the scenes of my early adventures. We left the train at Tucson to prepare for the desert.

When I had last touched the ground at Tucson in 1860 there was only a cluster of mud huts, and a population which though not virtuous was happy, for it was far from vigilance committees, sheriffs, ropes, and wristlets. The owner of the one eating place greeted the hungry, one hand holding a revolver, the other outstretched and expectant.

Now, after half a century, Tucson was a flourishing city with fine streets, luxurious hotels and plate-glass-windowed department stores. I was a dazed Rip van Winkle. Was it only last night that I had slept on an earthen floor to wake up at the sound of shots and find myself among a lot of players who were dodging the bullets of two gentlemen, each casting aspersions on the other's moral character, and on the virtue of the other's mother?

This vision was still before me when I registered at

the hotel. A reporter who had seen me enter my name hailed me as the pioneer of Arizona. From that moment I found myself to be the sole depository of history of Arizona before the Civil War — the legendary, heroic period. Among the interesting men we met was Captain Burgess, a fine specimen of the old-time ranger and scout type, who wore his long hair in a knot on the back of his head. He had scouted with Kit Carson and Buffalo Bill, and enjoyed the occasional removal of one of the many bullets that enriched his body.

Before starting on our proposed desert trip we made an excursion of several days to the Santa Rita mines — where I had passed tragic months.

It was early March, with delightfully warm days and cool nights, and an air so clear that distant mountains were deceptively near at hand. A gravelly arid plain spread out for many miles in all directions, its monotony relieved only by clumps of sagebrush and here and there an *ocotillo* tree — always a picturesque group of tall stems diverging from a common root — and straight ahead the great *massif* of the Santa Rita peaks. It was a region for travel in the saddle and with pack mules, not for motor cars. With me were my three children, Raphael and his wife Amelie, Margarita, and Elise, who, although mothers, will appear herein collectively as "the girls." As it was to be a rough camping expedition, we carried only blankets and food, water and gasoline. Each had a roll of blankets stored on the engine hood. The food was bacon, cheese, bread, marmalade, canned beans, tea, and sugar. And there was a frying pan, wooden plates to be burned, and cups. There may have been also a knife and teaspoons, but we may have eaten with our fingers.

Instead of tents I took twelve yards of extra wide and

heavy canvas to pull over all of us in case of rain, for we were to sleep on the ground.

In the afternoon, as we came near the influence of the mountain, the country became uneven, dry watercourses appeared, the surface bore grasses of the semiarid region, and cattle betokened the presence of ranches. We camped near the site of Fort Buchanan.

Scarcely a trace remains of the fort nor of its successor, Camp Crittenden. Looking at the site I remembered the mingled feelings with which I last left it, and our easy conscience in stealing the Colonel's pointer in revenge, and how well the dog justified the theft.

A long drive along the Sonoita, and then a long ascent among diabolically weird rock forms, brought us at about 4,500 feet into the zone of live-oaks and *mesquite acacias*. Here, too, charming small cacti nestled among the bare rocks, and the yucca, the amole — good substitute for soap — the Spanish bayonet and century plant. Those yuccas! On lonely night rides along this same route my imagination had seen in their dark bodies and tall stems possible lance-bearing Apaches.

We were now on the Santa Rita property. It was beyond recognition. In my time live-oak and *mesquite* trees gave the rolling country the appearance of a vast orchard of old apple trees, and the surface was covered with the semi-arid grasses and small cacti. Now all was bare. The trees had been cut off; cloudbursts had stripped the surface.

In a solitary adobe hut lived a Mexican with a picturesque family. He tried to show the old hacienda. There were ruins of houses, much later than my time; but my furnace was standing as part of the wall of one of these, and the girls took as mementos pieces of the slag that lay near.

In spite of the general desolation the grander features of the scenery remained. On the north the great mountain stood unchanged, its structural lines all leading up to where at nearly 10,000 feet rose the ice-crowned peak. On the south, above a steep ascent, were the long cliffs that Grosvenor loved to sketch, and far in the west the peak of Baboquivari.

The Mexican found for us the grave of Grosvenor in a dense growth of brush. I had marked the spot with a stone cut from a white volcanic tufa and had carved on it a brief inscription. On the stone we now found the legend was so well chiselled that I could not be sure that it had not replaced mine.

I knew now that the curtain was again rising on the dark drama of 1861, and that day by day memory would reënact tragedies of those days. In the first of these Grosvenor had been the victim. In every sense a man, and lovable, his career had ended far from wife and children. Mine was then beginning, and with it important phases of education. For one the still standing fragment of my adobe furnace symbolized the end of a struggle to use European methods in metallurgy in Arizona, and the necessity of building anew on a foundation of chemistry in theory, and adapting in practice methods of Pliny, Agricola, and Mexico.

Another phase was the life among the most varied elements of a society living without the restraint of any semblance of constituted authority, a condition that had made possible the murder of my two predecessors and two successors.

We did not succeed in finding the exact spot where Grosvenor was killed — so great a change had come over the surface through cloudbursts burying the old road and destroying vegetation. The Mexican who showed

us around the region was killed by lightning a few days after we left.

On the way back to Tucson my left foot gave me some trouble in walking for exercise, and in undressing about midnight I found one of my toes wholly black — so black that I called for a doctor. He said it was gangrene and the toe must be cut off at once.

"I don't believe it," I answered. "I'll wait and see."

"It is surely gangrene, *senile* gangrene," he insisted. "You shouldn't wait. There was a man who came here last year from Seattle with just such a toe. He waited before letting me take it off, and then it was too late, and I had to amputate at the ankle and again below the hip. I'll come before ten to-morrow."

I went to bed. "At my age a toe more or less won't make much difference," I thought, and slept soundly. When in the morning I told the children, they went to Captain Burgess. He gave the names of doctors to consult, but none of them would meet with mine. On the way back they met and told our head chauffeur.

He laughed and explained: "I saw Mr. Pumpelly drop a big rock yesterday morning. Judging by his language it must have hurt a lot!"

When they told me this, I remembered that I had tried to place stepping stones across a brook near the camp. Standing with my left foot on the low bank and with the right one on a wobbly stone behind, I had dropped a large round stone, and at the same instant my right foot had slipped into the icy cold water. Hence the "language." The cold water had made me forget the little incident of the impact of the stone.

When the doctor came prepared to operate, I dismissed him with his fee for the night call. The next day the toe was as good as ever.

In planning the journey I had intended to find somewhere in the high mountains a grassy watered valley with an outlook far over the desert, but we had come too early in the season. As an alternative we decided to strike out boldly to a point about 100 miles distant on the Mexican border where we should reach the "Old Yuma Trail" on which Poston and I had escaped from Arizona. We would follow this for about 150 miles to Yuma. It seemed a simple thing to do with three Ford cars and three drivers. With the chauffeurs we made a party of eight.

Our blankets were in canvas rolls and lashed to the automobile hoods. Tins of gasoline, boxes of food, and cooking utensils were strapped to the running boards and canvas bags of water hung on the sides of the cars.

The first day out our head chauffeur gave part of our gasoline to a man in need thereof who said we could replenish at Indian Oases.

Our first camp was among sahuaras by a clear brook rushing down from the high gorges of Baboquivari — the only running water we were to see during the desert journey.

MacDonald, the head chauffeur, a Scotchman born in New England, had a fund of humor. I believe I have abstained from telling any one else's stories, but he had one that I can't help repeating. On a ship nearing the equator there was an Irishman who was anxious to see the "line" he had heard of. Next day the mate stretched a hair from his own head across the lense of a telescope and calling the Irishman said: "Now look quick and you'll see the line." The victim took a look.

"Well, do you see the line?"

"Yes, and begorrah there's a camel walking on it."

Naturally there was no gasoline at Indian Oases.

"We would have to go to Ajo," which meant at least a three days' detour. In our disappointment we did not realize that gift of gasoline was to bring luck.

I had heard Poston tell of his discovery of a mountain of copper ore in the Ajo range in the fifties. I knew that much later a herd of camels had been brought from Arabia to bring water there, probably from the forty miles distant Gila River, and that the only result was the failure of the enterprise and the present belief in the occasional appearance of a lone camel in the desert solitudes.

On the way thither we camped one night on a sheep ranch where a large tank was full of water from a deep-drilled well. The water contained great numbers of the larvæ of both the malarial Anopheles mosquito and the innocent variety.

At last we looked down on Ajo. Capital and engineering were here preparing to create wealth in the waterless waste; wells hundreds of feet deep had tapped reservoirs. We had a cordial welcome from Mr. Curley, the manager of the New Cornelia Mining Company. But there was no gasoline, only a chance that some might soon arrive. It did arrive before night. Both detour and delay at Ajo were doubly lucky, for I learned that for the rest of the trip a guide would be absolutely necessary. With much difficulty I engaged the only Indian who had seen the *Tinajas Altas* on the Old Yuma Trail. These mountain potholes must be reached and water found in them without delay in trying to find them. Tomaso was eighty-five, and his knowledge dated from forty years back. It became evident later that the difficulty with Tomaso was that he was torn between the call of the desert and the risk of braving its dangers with eight "tenderfeet."

Three dollars a day and a promise to return him to his home carried the day.

The other piece of luck — less romantic — was that the delay enabled me to see the property, and this led me to telegraph, later from Yuma, to buy a block of stock in the Company which I soon sold for more than enough to pay twice for the whole expedition.

The next day out from Ajo we came to an abandoned deep well where we were to fill our canvas bags with water. Now it seems that new sacks hold water properly only after soaking for two or more days. As ours had been filled less than a day they were fast emptying. It seems also that after hard work in raising a gallon or two out of the well the chauffeurs decided that the water was bad, and that anyway the supply in the bags would last to the next water. They little knew the real desert.

After we had passed a party returning from hunting wild sheep near the Gulf of California, two of their guides galloped to overtake us. When they heard we were going to Yuma they said it would be impossible for us to make the journey in automobiles. It had never been done and to fail would be extremely dangerous; but since they thought we would, that year, find water at the *Tinajas Altas* we went on. We heard later that the hunters on their return to Ajo wired to Yuma to send out a party to rescue us.

Before long worse things began to happen. We had come to a region where cloudbursts had cut broad shallow channels in the sand plain. They varied from a few yards to several rods in width, with banks a few inches to a foot or more high. The first of these was very low, but it took a long time and hard work to get one machine after another over the banks with the aid of the engines

and with all hands pushing. The water was low in the radiators and in the sacks. The dry air was hot and nine throats were thirsty. Tomaso examined the water supply and looked anxious. Then we came into a channel with higher banks, where we stalled. No amount of effort availed. Tomaso said we must not drink water. He had already refused it for himself.

There was clearly an element of real danger in our situation. An examination showed that many similar obstructions lay before us. Our sacks were losing water; so, too, were three radiators. Unless we could find some way to avoid this stalling we should die of thirst, for on the dry desert one cannot live two days without water, nor could the automobiles.

Fortunately I remembered having brought twelve yards of wide canvas to pull over us at night if it should rain. This we stretched so that the bank was under the middle. Then with one man driving and the others pushing we triumphed. As there had been no rain that canvas would probably have been left by the way if the drivers, being afraid of skunks, hadn't slung it, like a boat, between two cars to sleep in. By its aid we got over the bad tract and before dark came on to the smooth hard floor of a *playa*. Here in 1861 a cloudburst had saved the lives of my party. We were now on the Old Yuma Trail.

It was probably on the bad stretch just described that, shortly after our experience, three men tried to cross the desert in an automobile. Two of them died, and one was strong enough to reach a point where he was rescued in an exhausted condition.

We felt that we were now out of danger. We were on the trail and only about fifteen miles from the *Tule* well.

The next night we camped at the abandoned *Tule* well. Its water was both brackish and offensive, but on

the desert one may not be squeamish. Several months later a friend who had been over that route on a survey asked:

"How did you like the *Tule* well water?"

"Not much," I answered.

"Naturally," he said, "for we found and left a man in it two years ago."

From there to the *Tinajas Altas* we passed between granite mountains that were disintegrating into the weirdest of desert rock forms often deeply honeycombed by sand blasting.

The *Tinajas Altas* (high tanks) are a series of holes one above the other on the side of a bare granite mountain. They seem to lie in a crack rather than in a ravine, and the ascent from one to the other is a dangerous climb up a precipice. My son found eight or nine of these holes full of water, for during the last two years there had been many cloudbursts on the mountains, and unusual rains over all Arizona. Ordinarily the holes are dry unless there has occurred a cloudburst within a few weeks. In 1861 they stood half-way in a waterless stretch of a hundred miles or more, and to find them empty meant almost certain death to man and beast. This was the chance Poston and I had to face, and we were saved by a downpour on the *playa*.

It is a matter of history that more than two thousand persons have died of thirst and exhaustion on this part of the "Old Yuma Trail." I remembered now, too well, tales about these potholes to dare to peer towards the bottom; the surface swarmed with larvæ of mosquitoes, malarial and others.

The lapse of half a century had wrought a great change. I had seen on the trail along the base of the *Tinaji* range, near the potholes, great numbers of dried

carcases of cattle and horses that had died there of thirst, on their way to California, when gold was abundant and meat almost unobtainable. Of these there was now no sign. They had been buried under débris washed by cloudbursts down from the ever-crumbling mountains.

Only Raphael succeeded in reaching the upper holes, where at the top he took a panoramic photograph. There, too, he found the sun-cracked horns of the bighorn.

Although it was early in March the mercury stood at over 100° F. In September, 1861, it marked 126° in the shade.

In 1861 our trail ran thirty miles on the east side of the mountains to the Gila River, but the later discovery of a gold mine, supplied by water from the high mountain, made possible a route on the west side. Without this watering place we could not have got through to the Gila, so fast did our supply vanish and thirst increase. One car gave out and had to be left with its driver to make repair.

At last we reached Yuma. And now there was a real city on the very spot where Poston's ready wit had led him to survey an imaginary city in order to pay the ferryman in corner lots. We drove through good streets, where the goods behind big plate-glass windows betokened families of rich farmers.

In the old days this region was the land of the Yumas, a particularly savage tribe armed with war clubs and bitter enemies of both Papagoes and Apaches. Many of them swaggered along the streets and showed unwelcome interest in Tomaso, who was anxious because he was off his tribal ground. So we planned to protect him till he should take the train to go home.

We made a sorry looking procession into a large and

comfortable hotel. The sun had burned the skin off the back of my hands. The girls hid, behind thick veils, lips swollen to exceed in size those of a Congo Venus.

That night Raphael and Amelie started homeward, taking Tomaso as far as Gila Bend, whence he could reach Ajo by stage. The old man, with his money well stored out of sight, left us with a more smiling face than one often sees on an Indian. He was a fine specimen of the old time agricultural Pimas.

The next day we, my two girls and I, started for Phoenix on the way to Globe where I wanted to see the Miami mine, not so much on account of my interest in the mine as an excuse to see the country and the Roosevelt dam.

In order to cross the Gila River we went up it to Dome, passing, on the way, through the spot where, in the old time, Poston and I and the rest of the party weathered through an all-night sandstorm that, in pitch darkness, threatened to bury us.

A rickety ferry boat managed to get us and the cars to the opposite bank.

We had left the golden desert, its painted mountains, its mysteries and dangers, but we already felt the call to return, and if we had still had Tomaso with us we could hardly have resisted the temptation.

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